



## SEQUENCE LISTING

<110> Innogenetics N.V.

<120> New sequences of hepatitis C virus genotypes for diagnosis, prophylaxis and therapy

<130> 35

<160> 284

<170> PatentIn version 3.1

<210> 1

<211> 213

<212> DNA

<213> hepatitis C virus

<400> 1

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tacatcaagg ccacagcggc tgcaagggcc gcaggcctcc ggaaccgga ctttcttgtc      180
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<210> 2

<211> 71

<212> PRT

<213> hepatitis C virus

<400> 2

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1           5           10           15
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Ala Gln Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr
20           25           30
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```
Ser Phe Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Thr Ala Ala Ala
35           40           45
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Arg Ala Ala Gly Leu Arg Asn Pro Asp Phe Leu Val Cys Gly Asp Asp
50           55           60
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<210> 3

<211> 213

<212> DNA  
<213> hepatitis C virus

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tacatcaagg ccacagcggc tgcaagggcc gcaggcctcc ggaaccgga ctttcttgtc 180  
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<210> 4  
<211> 71  
<212> PRT  
<213> hepatitis C virus

<400> 4  
Leu Thr Glu Arg Leu Tyr Cys Gly Gly Pro Met Phe Asn Ser Lys Gly  
1 5 10 15  
Ala Gln Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr  
20 25 30  
Ser Phe Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Thr Ala Ala Ala  
35 40 45  
Lys Ala Ala Gly Leu Arg Asn Pro Asp Phe Leu Val Cys Gly Asp Asp  
50 55 60  
Leu Val Val Val Ala Glu Ser  
65 70

<210> 5  
<211> 213  
<212> DNA  
<213> hepatitis C virus

<400> 5  
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tacatcaaag ccacagcggc cgcaaaagcc gcaggcctcc ggagcccgga ctttcttgtc 180  
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<210> 6  
<211> 71

<212> PRT  
<213> hepatitis C virus

<400> 6

Leu Thr Glu Arg Leu Tyr Cys Gly Gly Pro Met Phe Asn Ser Lys Gly  
1 5 10 15

Ala Gln Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr  
20 25 30

Ser Phe Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Thr Ala Ala Ala  
35 40 45

Lys Ala Ala Gly Leu Arg Ser Pro Asp Phe Leu Val Cys Gly Asp Asp  
50 55 60

Leu Val Val Val Ala Glu Ser  
65 70

<210> 7  
<211> 213  
<212> DNA  
<213> hepatitis C virus

<400> 7  
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tacatcaaag ccacagcggc cgcaaaagcc gcaggcctcc ggagcccgga ctttcttgtc 180  
tgcgagatg atctggtcgt ggtggctgag agt 213

<210> 8  
<211> 71  
<212> PRT  
<213> hepatitis C virus

<400> 8

Leu Thr Glu Arg Leu Tyr Cys Gly Gly Pro Met Phe Asn Ser Lys Gly  
1 5 10 15

Ala Gln Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr  
20 25 30

Ser Phe Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Thr Ala Ala Ala  
35 40 45

Lys Ala Ala Gly Leu Arg Ser Pro Asp Phe Leu Val Cys Gly Asp Asp  
 50 55 60

Leu Val Val Val Ala Glu Ser  
 65 70

<210> 9  
 <211> 213  
 <212> DNA  
 <213> hepatitis C virus

<400> 9  
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 tacatcaagg ccacagcggc tgcaaaagcc gcaggcctcc ggaaccgga ctttcttgtt 180  
 tgcgagatg atttggtcgt ggtggctgag agt 213

<210> 10  
 <211> 71  
 <212> PRT  
 <213> hepatitis C virus

<400> 10

Leu Thr Glu Arg Leu Tyr Cys Gly Gly Pro Met Phe Asn Ser Lys Gly  
 1 5 10 15

Ala Gln Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr  
 20 25 30

Ser Phe Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Thr Ala Ala Ala  
 35 40 45

Lys Ala Ala Gly Leu Arg Asn Pro Asp Phe Leu Val Cys Gly Asp Asp  
 50 55 60

Leu Val Val Val Ala Glu Ser  
 65 70

<210> 11  
 <211> 213  
 <212> DNA  
 <213> hepatitis C virus

<400> 11  
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tacatcaagg ccacagcggc tgcaaaagcc gcaggcctcc ggaaccgga ctttcttggt 180  
tgcgagatg atttggtcgt ggtggctgag agt 213

<210> 12  
<211> 71  
<212> PRT  
<213> hepatitis C virus

<400> 12  
Leu Thr Glu Arg Leu Tyr Cys Gly Gly Pro Met Phe Asn Ser Lys Gly  
1 5 10 15  
Ala Gln Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr  
20 25 30  
Ser Phe Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Thr Ala Ala Ala  
35 40 45  
Lys Ala Ala Gly Leu Arg Asn Pro Asp Phe Leu Val Cys Gly Asp Asp  
50 55 60  
Leu Val Val Val Ala Glu Ser  
65 70

<210> 13  
<211> 541  
<212> DNA  
<213> hepatitis C virus

<400> 13  
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cctctatgtc cttaccaacg actgttccaa tagcagtatt gtgtatgagg ccgatgacgt 240  
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gacccagtg acacctacag tggcagtcag gtacgtcgga gcaaccaccg cttcgatacg 360  
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tatgtgtggg gccgtcttcc tcgtgggaca agccttcacg ttcagacctc gtcgccatca 480  
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<210> 14  
<211> 180  
<212> PRT  
<213> hepatitis C virus

<400> 14

Val Gly Ala Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val  
1 5 10 15

Arg Ala Leu Glu Asp Gly Ile Asn Phe Ala Thr Gly Asn Leu Pro Gly  
20 25 30

Cys Ser Phe Ser Ile Phe Leu Leu Ala Leu Phe Ser Cys Leu Ile His  
35 40 45

Pro Ala Ala Ser Leu Glu Trp Arg Asn Thr Ser Gly Leu Tyr Val Leu  
50 55 60

Thr Asn Asp Cys Ser Asn Ser Ser Ile Val Tyr Glu Ala Asp Asp Val  
65 70 75 80

Ile Leu His Thr Pro Gly Cys Val Pro Cys Val Gln Asp Gly Asn Thr  
85 90 95

Ser Ala Cys Trp Thr Pro Val Thr Pro Thr Val Ala Val Arg Tyr Val  
100 105 110

Gly Ala Thr Thr Ala Ser Ile Arg Arg His Val Asp Met Leu Val Gly  
115 120 125

Ala Ala Thr Met Cys Ser Ala Leu Tyr Val Gly Asp Met Cys Gly Ala  
130 135 140

Val Phe Leu Val Gly Gln Ala Phe Thr Phe Arg Pro Arg Arg His Gln  
145 150 155 160

Thr Val Gln Thr Cys Asn Cys Ser Leu Tyr Pro Gly His Leu Ser Gly  
165 170 175

His Arg Met Ala  
180

<210> 15  
<211> 541  
<212> DNA  
<213> hepatitis C virus

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tatgtgtggg gccgtcttcc tcgtgggaca agccttcacg ttcagacctc gtcgccatca 480  
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<210> 16  
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<212> PRT  
<213> hepatitis C virus

<400> 16

Val Gly Ala Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val  
1 5 10 15

Arg Ala Leu Glu Asp Gly Ile Asn Phe Ala Thr Gly Asn Leu Pro Gly  
20 25 30

Cys Ser Phe Ser Ile Phe Leu Pro Ala Leu Phe Ser Cys Leu Ile His  
35 40 45

Pro Ala Ala Ser Leu Glu Trp Arg Asn Thr Ser Gly Leu Tyr Val Leu  
50 55 60

Thr Asn Asp Cys Ser Asn Ser Ser Ile Val Tyr Glu Ala Asp Asp Val  
65 70 75 80

Ile Leu His Thr Pro Gly Cys Val Pro Cys Val Gln Asp Gly Asn Thr  
85 90 95

Ser Ala Cys Trp Thr Pro Val Thr Pro Thr Val Ala Val Arg Tyr Val  
100 105 110

Gly Ala Thr Thr Ala Ser Ile Arg Arg His Val Asp Ile Leu Val Gly  
115 120 125

Ala Ala Thr Met Cys Ser Ala Leu Tyr Val Gly Asp Met Cys Gly Ala  
130 135 140

Val Phe Leu Val Gly Gln Ala Phe Thr Phe Arg Pro Arg Arg His Gln  
145 150 155 160

Thr Val Gln Thr Cys Asn Cys Ser Leu Tyr Pro Gly His Leu Ser Gly  
165 170 175

His Arg Met Ala  
180

<210> 17  
<211> 541  
<212> DNA  
<213> hepatitis C virus

<400> 17  
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caggcatgta gacatattgg tgggcgcggc cacgatgtgc tctgctctct acgtgggtga 420  
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aacgggtccag acctgtaact gtcactgta cccaggccat ctttcaggac accgaatggc 540  
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<210> 18  
<211> 180  
<212> PRT  
<213> hepatitis C virus

<400> 18

Val Gly Ala Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val  
1 5 10 15

Arg Ala Leu Glu Asp Gly Ile Asn Phe Ala Thr Gly Asn Leu Pro Gly  
20 25 30

Cys Ser Phe Ser Ile Phe Leu Leu Ala Leu Phe Ser Cys Leu Ile His  
35 40 45

Pro Ala Ala Ser Leu Glu Trp Arg Asn Thr Ser Gly Leu Tyr Val Leu  
50 55 60

Thr Asn Asp Cys Ser Asn Ser Ser Ile Val Tyr Glu Ala Asp Asp Val  
65 70 75 80

Ile Leu His Thr Pro Gly Cys Val Pro Cys Val Gln Asp Gly Asn Thr  
85 90 95

Ser Ala Cys Trp Thr Pro Val Thr Pro Thr Val Ala Val Arg Tyr Val  
100 105 110

Gly Ala Thr Thr Ala Ser Ile Arg Arg His Val Asp Ile Leu Val Gly  
115 120 125

Ala Ala Thr Met Cys Ser Ala Leu Tyr Val Gly Asp Met Cys Gly Ala  
130 135 140

Val Phe Leu Val Gly Gln Ala Phe Thr Phe Arg Pro Arg Arg His Gln  
145 150 155 160

Thr Val Gln Thr Cys Asn Cys Ser Leu Tyr Pro Gly His Leu Ser Gly  
165 170 175

His Arg Met Ala  
180

<210> 19  
<211> 541

<212> DNA  
<213> hepatitis C virus

<400> 19  
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tgctctgttc tcttgcttaa ttcattccagc agctagtcta gagtggcgga atacgtctgg 180  
cctctatgtc cttaccaacg actgttccaa tagcagtatt gtgtacgagg ccgatgacgt 240  
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tatgtgtggg gccgtcttcc ttgtgggaca agccttcacg ttcagacctc gtcgccatca 480  
aacggtccag acctgtaact gctcgctgta cccaggccat ctttcaggac atcgaatggc 540  
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<210> 20  
<211> 180  
<212> PRT  
<213> hepatitis C virus

<400> 20

Val Gly Ala Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val  
1 5 10 15

Arg Ala Leu Glu Asp Gly Ile Asn Phe Ala Thr Gly Asn Leu Pro Gly  
20 25 30

Cys Ser Phe Ser Ile Phe Leu Leu Ala Leu Phe Ser Cys Leu Ile His  
35 40 45

Pro Ala Ala Ser Leu Glu Trp Arg Asn Thr Ser Gly Leu Tyr Val Leu  
50 55 60

Thr Asn Asp Cys Ser Asn Ser Ser Ile Val Tyr Glu Ala Asp Asp Val  
65 70 75 80

Ile Leu His Thr Pro Gly Cys Ile Pro Cys Val Gln Asp Gly Asn Thr  
85 90 95

Ser Thr Cys Trp Thr Pro Val Thr Pro Thr Val Ala Val Lys Tyr Val

100

105

110

Gly Ala Thr Thr Ala Ser Ile Arg Ser His Val Asp Leu Leu Val Gly  
 115 120 125

Ala Ala Thr Met Cys Ser Ala Leu Tyr Val Gly Asp Met Cys Gly Ala  
 130 135 140

Val Phe Leu Val Gly Gln Ala Phe Thr Phe Arg Pro Arg Arg His Gln  
 145 150 155 160

Thr Val Gln Thr Cys Asn Cys Ser Leu Tyr Pro Gly His Leu Ser Gly  
 165 170 175

His Arg Met Ala  
 180

<210> 21  
 <211> 541  
 <212> DNA  
 <213> hepatitis C virus

<400> 21  
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 tgctctgttc tcttgcttaa ttcattccagc agctagtcta gaggggcgga atacgtctgg 180  
 cctctatgtc cttaccaacg actgttccaa tagcagtatt gtgtacgagg ccgatgacgt 240  
 tattctgcac acaccgggct gcataccttg tgtccaggac ggcaatacat ccacgtgctg 300  
 gaccccgatg acacctacag tggcagtcga gtacgtcgga gcaaccaccg cttcgatagc 360  
 cagtcagtgtg gacctattag tgggcgcggc cagcagtggtc tctgcgctct acgtgggtga 420  
 catgtgtggg gctgtcttcc tcgtgggaca agccttcacg ttcagacctc gtcgccatca 480  
 aacggtccag acctgtaact gctcgtgtga cccaggccat ctttcaggac atcgaatggc 540  
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<210> 22  
 <211> 180  
 <212> PRT  
 <213> hepatitis C virus

<400> 22

Val Gly Ala Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val  
 1 5 10 15

Arg Ala Leu Glu Asp Gly Ile Asn Phe Ala Thr Gly Asn Leu Pro Gly  
 20 25 30

Cys Ser Phe Ser Ile Phe Leu Leu Ala Leu Phe Ser Cys Leu Ile His  
 35 40 45

Pro Ala Ala Ser Leu Glu Trp Arg Asn Thr Ser Gly Leu Tyr Val Leu  
 50 55 60

Thr Asn Asp Cys Ser Asn Ser Ser Ile Val Tyr Glu Ala Asp Asp Val  
 65 70 75 80

Ile Leu His Thr Pro Gly Cys Ile Pro Cys Val Gln Asp Gly Asn Thr  
 85 90 95

Ser Thr Cys Trp Thr Pro Val Thr Pro Thr Val Ala Val Lys Tyr Val  
 100 105 110

Gly Ala Thr Thr Ala Ser Ile Arg Ser His Val Asp Leu Leu Val Gly  
 115 120 125

Ala Ala Thr Met Cys Ser Ala Leu Tyr Val Gly Asp Met Cys Gly Ala  
 130 135 140

Val Phe Leu Val Gly Gln Ala Phe Thr Phe Arg Pro Arg Arg His Gln  
 145 150 155 160

Thr Val Gln Thr Cys Asn Cys Ser Leu Tyr Pro Gly His Leu Ser Gly  
 165 170 175

His Arg Met Ala  
 180

<210> 23  
 <211> 541  
 <212> DNA  
 <213> hepatitis C virus

<400> 23  
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tgctctgttc tcttgcttaa tccatccagc agctgggtcta gaggggcgga atacgtctgg 180  
 cctctatgtc cttaccaacg actgttccaa tagtagtatt gtgtatgagg ccgatgacgt 240  
 tattctgcac gcgcccggct gtgtaccttg tgtccaggac ggcaatacgt ctacatgctg 300  
 gaccccagta acacctacag tggcagtcag gtacgtcggg gcaaccaccg cttcgatacg 360  
 cagtcatgtg gacctgttag taggcgcggc cacgatgtgc tctgcgcttt acgtgggtga 420  
 tatgtgtggg gccgtcttcc tcgtgggaca agccttcacg ttcagacccc gccgccatca 480  
 aacggtccag acctgtaact gctcgtgtga ccaggccat ctttcaggac atcgcatggc 540  
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<210> 24  
 <211> 180  
 <212> PRT  
 <213> hepatitis C virus

<400> 24

Val Gly Ala Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val  
 1 5 10 15

Arg Ala Leu Glu Asp Gly Ile Asn Phe Ala Thr Gly Asn Leu Pro Gly  
 20 25 30

Cys Ser Phe Ser Ile Phe Leu Leu Ala Leu Phe Ser Cys Leu Ile His  
 35 40 45

Pro Ala Ala Gly Leu Glu Trp Arg Asn Thr Ser Gly Leu Tyr Val Leu  
 50 55 60

Thr Asn Asp Cys Ser Asn Ser Ser Ile Val Tyr Glu Ala Asp Asp Val  
 65 70 75 80

Ile Leu His Ala Pro Gly Cys Val Pro Cys Val Gln Asp Gly Asn Thr  
 85 90 95

Ser Thr Cys Trp Thr Pro Val Thr Pro Thr Val Ala Val Arg Tyr Val  
 100 105 110

Gly Ala Thr Thr Ala Ser Ile Arg Ser His Val Asp Leu Leu Val Gly  
 115 120 125

Ala Ala Thr Met Cys Ser Ala Leu Tyr Val Gly Asp Met Cys Gly Ala  
 130 135 140

Val Phe Leu Val Gly Gln Ala Phe Thr Phe Arg Pro Arg Arg His Gln  
 145 150 155 160

Thr Val Gln Thr Cys Asn Cys Ser Leu Tyr Pro Gly His Leu Ser Gly  
 165 170 175

His Arg Met Ala  
 180

<210> 25  
 <211> 541  
 <212> DNA  
 <213> hepatitis C virus

<400> 25  
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 tgctctgttc tcttgcttaa tccatccagc agctgggtcta gaggggcgga atacgtctgg 180  
 cctctatgtc cttaccaacg actgttccaa tagtagtatt gtgtatgagg ccgatgacgt 240  
 tattctgcac gcgcccggct gtgtaccttg tgtccaggac ggcaatacgt ctacatgctg 300  
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 cagtcatgtg gacctgtag taggcgcggc cacgatgtgc tctgcgcttt acgtgggtga 420  
 tatgtgtggg gccgtcttcc tcgtgggaca agccttcacg ttcagacccc gccgccatca 480  
 aacggtccag acctgtaact gctcgtgtga cccaggccat ctttcaggac atcgaatggc 540  
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<210> 26  
 <211> 180  
 <212> PRT  
 <213> hepatitis C virus

<400> 26

Val Gly Ala Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val  
 1 5 10 15

Arg Ala Leu Glu Asp Gly Ile Asn Phe Ala Thr Gly Asn Leu Pro Gly  
 20 25 30

Cys Ser Phe Ser Ile Phe Leu Leu Ala Leu Phe Ser Cys Leu Ile His  
 35 40 45

Pro Ala Ala Gly Leu Glu Trp Arg Asn Thr Ser Gly Leu Tyr Val Leu  
 50 55 60

Thr Asn Asp Cys Ser Asn Ser Ser Ile Val Tyr Glu Ala Asp Asp Val  
 65 70 75 80

Ile Leu His Ala Pro Gly Cys Val Pro Cys Val Gln Asp Gly Asn Thr  
 85 90 95

Ser Thr Cys Trp Thr Pro Val Thr Pro Thr Val Ala Val Arg Tyr Val  
 100 105 110

Gly Ala Thr Thr Ala Ser Ile Arg Ser His Val Asp Leu Leu Val Gly  
 115 120 125

Ala Ala Thr Met Cys Ser Ala Leu Tyr Val Gly Asp Met Cys Gly Ala  
 130 135 140

Val Phe Leu Val Gly Gln Ala Phe Thr Phe Arg Pro Arg Arg His Gln  
 145 150 155 160

Thr Val Gln Thr Cys Asn Cys Ser Leu Tyr Pro Gly His Leu Ser Gly  
 165 170 175

His Arg Met Ala  
 180

<210> 27  
 <211> 541  
 <212> DNA  
 <213> hepatitis C virus

<400> 27  
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 cctctatgtc cttaccaacg actgttcaa tagtagtatt gtgtatgagg ccgatgacgt 240  
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gaccccagta acacctacag tggcagtcag gtacgtcggg gcaaccaccg cttcgatacg 360  
cagtcatgtg gacctgttag taggcgcggc cacgatgtgc tctgcgcttt acgtgggtga 420  
tatgtgtggg gccgtcttcc tcgtgggaca agccttcacg ttcagacccc gccgccatca 480  
aacggtccag acctgtaact gctcgtctga cccaggccat ctttcaggac atcgaatggc 540  
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<210> 28  
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<212> PRT  
<213> hepatitis C virus

<400> 28

Val Gly Ala Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val  
1 5 10 15

Arg Ala Leu Glu Asp Gly Ile Asn Phe Ala Thr Gly Asn Leu Pro Gly  
20 25 30

Cys Ser Phe Ser Ile Phe Leu Leu Ala Leu Phe Ser Cys Leu Ile His  
35 40 45

Pro Ala Ala Gly Leu Glu Trp Arg Asn Thr Ser Gly Leu Tyr Val Leu  
50 55 60

Thr Asn Asp Cys Ser Asn Ser Ser Ile Val Tyr Glu Ala Asp Asp Val  
65 70 75 80

Ile Leu His Ala Pro Gly Cys Val Pro Cys Val Gln Asp Gly Asn Thr  
85 90 95

Ser Thr Cys Trp Thr Pro Val Thr Pro Thr Val Ala Val Arg Tyr Val  
100 105 110

Gly Ala Thr Thr Ala Ser Ile Arg Ser His Val Asp Leu Leu Val Gly  
115 120 125

Ala Ala Thr Met Cys Ser Ala Leu Tyr Val Gly Asp Met Cys Gly Ala  
130 135 140

Val Phe Leu Val Gly Gln Ala Phe Thr Phe Arg Pro Arg Arg His Gln  
145 150 155 160



Thr Val Gln Thr Cys Asn Cys Ser Leu Tyr Pro Gly His Leu Ser Gly  
165 170 175

His Arg Met Ala  
180

<210> 29  
<211> 287  
<212> DNA  
<213> hepatitis C virus

<400> 29  
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ctcgcgcgca ggctcctccc ccaagttggg acgagatgtg gaagtgtctc gtacggctta 180  
agccaacact acatggacct acgcctcttc tatatcggtt ggggcctgtc caaaatgaaa 240  
tctgcttgac acaccccatc acaaaataca tcatggcatg catgtca 287

<210> 30  
<211> 95  
<212> PRT  
<213> hepatitis C virus

<400> 30

Asp Phe Trp Glu Ser Val Phe Thr Gly Leu Thr His Ile Asp Ala His  
1 5 10 15

Phe Leu Ser Gln Thr Lys Gln Gln Gly Leu Asn Phe Ser Phe Leu Thr  
20 25 30

Ala Tyr Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser  
35 40 45

Trp Asp Glu Met Trp Lys Cys Leu Val Arg Leu Lys Pro Thr Leu His  
50 55 60

Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Pro Val Gln Asn Glu Ile  
65 70 75 80

Cys Leu Thr His Pro Ile Thr Lys Tyr Ile Met Ala Cys Met Ser  
85 90 95

<210> 31  
 <211> 401  
 <212> DNA  
 <213> hepatitis C virus

<400> 31  
 tccaaaatga aatctgcttg acacaccccg tcacaaaata cattatggca tgcattgtcag 60  
 ctgatctgga agtaaccacc agcacctggg tgttgcttgg aggggtcctc gcggccctag 120  
 cggcctactg cttgtcagtc ggctgcgttg taatcgtggg tcatatcgag ctgggggggca 180  
 agccggcact cgttccagac aaggagggtgt tgtatcaaca gtacgatgag atggaggagt 240  
 gctcgcaagc cgcccatac atcgaacaag ctgaggtaat agcccaccag ttcaaggaga 300  
 aaatccttgg actgctgcag cgagccaccc aacaacaagc tgtcattgag cccgtaatag 360  
 cttccaactg gcaaaagctt gaaaccttct ggcacaagca t 401

<210> 32  
 <211> 133  
 <212> PRT  
 <213> hepatitis C virus

<400> 32

Gln Asn Glu Ile Cys Leu Thr His Pro Val Thr Lys Tyr Ile Met Ala  
 1 5 10 15

Cys Met Ser Ala Asp Leu Glu Val Thr Thr Ser Thr Trp Val Leu Leu  
 20 25 30

Gly Gly Val Leu Ala Ala Leu Ala Ala Tyr Cys Leu Ser Val Gly Cys  
 35 40 45

Val Val Ile Val Gly His Ile Glu Leu Gly Gly Lys Pro Ala Leu Val  
 50 55 60

Pro Asp Lys Glu Val Leu Tyr Gln Gln Tyr Asp Glu Met Glu Glu Cys  
 65 70 75 80

Ser Gln Ala Ala Pro Tyr Ile Glu Gln Ala Gln Val Ile Ala His Gln  
 85 90 95

Phe Lys Glu Lys Ile Leu Gly Leu Leu Gln Arg Ala Thr Gln Gln Gln  
 100 105 110

Ala Val Ile Glu Pro Val Ile Ala Ser Asn Trp Gln Lys Leu Glu Thr

115

120

125

Phe Trp His Lys His  
130

<210> 33  
<211> 401  
<212> DNA  
<213> hepatitis C virus

<400> 33  
tccaaaatga aatctgcttg acacaccccg tcacaaaata cattatggca tgcattgtcag 60  
ctgatctgga agtaaccacc agcacctggg tgttgcttgg aggggtcctc gcggccctag 120  
cggcctactg cttgtcagtc ggctgcgttg taatcgtggg tcatatcgag ctggggggca 180  
agccggcact cgttccagac aaggaggtgt tgtatcaaca gtacgatgag atggaggagt 240  
gctcgcaagc cgccccatac atcgaacaag ctccaggtaat agcccaccag ttcaaggaga 300  
aaatccttgg actgctgcag cgagccaccc aacaacaagc tgtcattgag cccgtaatag 360  
cttccaactg gcaaaagctt gaaaccttct ggcacaagca t 401

<210> 34  
<211> 133  
<212> PRT  
<213> hepatitis C virus

<400> 34  
Gln Asn Glu Ile Cys Leu Thr His Pro Val Thr Lys Tyr Ile Met Ala  
1 5 10 15  
Cys Met Ser Ala Asp Leu Glu Val Thr Thr Ser Thr Trp Val Leu Leu  
20 25 30  
Gly Gly Val Leu Ala Ala Leu Ala Ala Tyr Cys Leu Ser Val Gly Cys  
35 40 45  
Val Val Ile Val Gly His Ile Glu Leu Gly Gly Lys Pro Ala Leu Val  
50 55 60  
Pro Asp Lys Glu Val Leu Tyr Gln Gln Tyr Asp Glu Met Glu Glu Cys  
65 70 75 80  
Ser Gln Ala Ala Pro Tyr Ile Glu Gln Ala Gln Val Ile Ala His Gln  
85 90 95

Phe Lys Glu Lys Ile Leu Gly Leu Leu Gln Arg Ala Thr Gln Gln Gln  
 100 105 110

Ala Val Ile Glu Pro Val Ile Ala Ser Asn Trp Gln Lys Leu Glu Thr  
 115 120 125

Phe Trp His Lys His  
 130

<210> 35  
 <211> 401  
 <212> DNA  
 <213> hepatitis C virus

<400> 35  
 tcacaaatga aatctgcttg acacacccca tcacaaaata catcatggca tgcattgtcag 60  
 ctgatctgga agtaaccacc agcacctggg ttttgcttgg aggggtcctc gcggccctag 120  
 cggcctactg cttgtcagtc ggttgtgttg tgattgtggg tcatatcgag ctgggggggca 180  
 agccggcaat cggtccagac aaagaggtgt tgtatcaaca atacgatgag atggaagagt 240  
 gctcacaagc tgccccatat atcgaacaag ctcaggtaat agctcaccag ttcaagggaa 300  
 aagtccttgg attgctgcag cgagccaccc aacaacaagc tgtcattgag cccatagtaa 360  
 ctaccaactg gcaaaagctt gaggcctttt ggcacaagca t 401

<210> 36  
 <211> 133  
 <212> PRT  
 <213> hepatitis C virus

<400> 36

Gln Asn Glu Ile Cys Leu Thr His Pro Ile Thr Lys Tyr Ile Met Ala  
 1 5 10 15

Cys Met Ser Ala Asp Leu Glu Val Thr Thr Ser Thr Trp Val Leu Leu  
 20 25 30

Gly Gly Val Leu Ala Ala Leu Ala Ala Tyr Cys Leu Ser Val Gly Cys  
 35 40 45

Val Val Ile Val Gly His Ile Glu Leu Gly Gly Lys Pro Ala Ile Val  
 50 55 60

Pro Asp Lys Glu Val Leu Tyr Gln Gln Tyr Asp Glu Met Glu Glu Cys  
65 70 75 80

Ser Gln Ala Ala Pro Tyr Ile Glu Gln Ala Gln Val Ile Ala His Gln  
85 90 95

Phe Lys Gly Lys Val Leu Gly Leu Leu Gln Arg Ala Thr Gln Gln Gln  
100 105 110

Ala Val Ile Glu Pro Ile Val Thr Thr Asn Trp Gln Lys Leu Glu Ala  
115 120 125

Phe Trp His Lys His  
130

<210> 37  
<211> 401  
<212> DNA  
<213> hepatitis C virus

<400> 37  
tccaaaatga aatctgcttg acacacccca tcacaaaata catcatggca tgcattgtcag 60  
ctgatctgga agtaaccacc agcacctggg ttttgcttgg aggggtcctc gcggccctag 120  
cggcctactg cttgtcagtc ggttggtgtg tgattgtggg tcatatcgag ctgggggggca 180  
agccgggaat cgttccagac aaagaggtgt tgtatcaaca atacgatgag atggaagagt 240  
gctcacaagc tgccccatat atcgaacaag ctcagggtgat agctcaccag ttcaaggaaa 300  
aagtccttgg attgctgcag cgagccaccc aacaacaagc tgtcattgag cccatagtaa 360  
ctaccaactg gcaaaagctt gaggcctttt ggcacaagca t 401

<210> 38  
<211> 133  
<212> PRT  
<213> hepatitis C virus

<400> 38

Gln Asn Glu Ile Cys Leu Thr His Pro Ile Thr Lys Tyr Ile Met Ala  
1 5 10 15

Cys Met Ser Ala Asp Leu Glu Val Thr Thr Ser Thr Trp Val Leu Leu  
20 25 30

Gly Gly Val Leu Ala Ala Leu Ala Ala Tyr Cys Leu Ser Val Gly Cys  
 35 40 45

Val Val Ile Val Gly His Ile Glu Leu Gly Gly Lys Pro Ala Ile Val  
 50 55 60

Pro Asp Lys Glu Val Leu Tyr Gln Gln Tyr Asp Glu Met Glu Glu Cys  
 65 70 75 80

Ser Gln Ala Ala Pro Tyr Ile Glu Gln Ala Gln Val Ile Ala His Gln  
 85 90 95

Phe Lys Glu Lys Val Leu Gly Leu Leu Gln Arg Ala Thr Gln Gln Gln  
 100 105 110

Ala Val Ile Glu Pro Ile Val Thr Thr Asn Trp Gln Lys Leu Glu Ala  
 115 120 125

Phe Trp His Lys His  
 130

<210> 39  
 <211> 401  
 <212> DNA  
 <213> hepatitis C virus

<400> 39  
 tccaaaatga aatctgcttg acacacccca tcacaaaata catcatggca tgcattgtag 60  
 ctgatctgga agtaaccacc agcacctggg ttttgcttgg aggggtcctc gcggccctag 120  
 cggcctactg cttgtcagtc ggttggtgtg tgattgtggg tcatatcgag ctgggggggca 180  
 agccggcaat cggtccagac aaagaggtgt tgtatcaaca atacgatgag atggaagagt 240  
 gctcacaagc tgccccatat atcgaacaag ctcaggtaat agctcaccag ttcaaggaaa 300  
 aagtccttgg attgctgcag cgagccaccc aacaacaagc tgtcattgag cccatagtaa 360  
 ctaccaactg gcaaaagctt gaggcctttt ggcacaagca t 401

<210> 40  
 <211> 133  
 <212> PRT  
 <213> hepatitis C virus

<400> 40

Gln Asn Glu Ile Cys Leu Thr His Pro Ile Thr Lys Tyr Ile Met Ala

1	5	10	15
Cys Met Ser Ala Asp Leu Glu Val Thr Thr Ser Thr Trp Val Leu Leu	20	25	30
Gly Gly Val Leu Ala Ala Leu Ala Ala Tyr Cys Leu Ser Val Gly Cys	35	40	45
Val Val Ile Val Gly His Ile Glu Leu Gly Gly Lys Pro Ala Ile Val	50	55	60
Pro Asp Lys Glu Val Leu Tyr Gln Gln Tyr Asp Glu Met Glu Glu Cys	65	70	75
Ser Gln Ala Ala Pro Tyr Ile Glu Gln Ala Gln Val Ile Ala His Gln	85	90	95
Phe Lys Glu Lys Val Leu Gly Leu Leu Gln Arg Ala Thr Gln Gln Gln	100	105	110
Ala Val Ile Glu Pro Ile Val Thr Thr Asn Trp Gln Lys Leu Glu Ala	115	120	125
Phe Trp His Lys His	130		

<210> 41  
 <211> 509  
 <212> DNA  
 <213> hepatitis C virus

<400> 41  
 ccatgagcac gaatcctaaa cctcaaagaa aaaccaaag aaacaccaac cgtcgccac 60  
 aggacgtcaa gttcccgggc ggtggtcaga tcgttggcgg agtttacttg ttgccgcgca 120  
 ggggccctag gatgggtgtg cgcgcgactc ggaagacttc ggaacggtcg caaccccggtg 180  
 gacggcgtea gcctattccc aaggcgcgcc agcccacggg ccggtcctgg ggtcaacccg 240  
 ggtacccttg gcccttttac gccaatgagg gcctcgggtg ggcagggtgg ctgctctccc 300  
 ctcgaggctc tcggcctaatt tggggcccca atgacccccg gcgaaaatcg cgtaatttgg 360  
 gtaaggtcat cgatacccta acgtgcggat tcgccgatct catgggggtat atcccgctcg 420  
 taggcggccc cattgggggc gtcgcaaggg ctctcgaca cggtgtgagg gtccttgagg 480

acggggtaaa ctatgcaaca gggaattta

509

<210> 42  
<211> 169  
<212> PRT  
<213> hepatitis C virus

<400> 42

Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn  
1 5 10 15

Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly  
20 25 30

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Met Gly Val Arg Ala  
35 40 45

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro  
50 55 60

Ile Pro Lys Ala Arg Gln Pro Thr Gly Arg Ser Trp Gly Gln Pro Gly  
65 70 75 80

Tyr Pro Trp Pro Leu Tyr Ala Asn Glu Gly Leu Gly Trp Ala Gly Trp  
85 90 95

Leu Leu Ser Pro Arg Gly Ser Arg Pro Asn Trp Gly Pro Asn Asp Pro  
100 105 110

Arg Arg Lys Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys  
115 120 125

Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Gly Pro Ile  
130 135 140

Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp  
145 150 155 160

Gly Val Asn Tyr Ala Thr Gly Asn Leu  
165

<210> 43  
<211> 509  
<212> DNA



<213> hepatitis C virus

<400> 43

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cctatgagcac gaatcctaaa cctcaaagaa aaaccaaag aaacaccaac cgtcgccac      60
aggacgtcaa gttcccgggc ggtggtcaga tcgttggcgg agtttacttg ttgccgcgca    120
ggggccctag gatgggtgtg cgcgcgactc ggaagacttc ggaacggtcg caaccccggtg    180
gacggcgctca gcctattccc aaggcgcgcc agcccacggg ccggtcctgg ggtcaaccgg    240
ggtacccttg gcccttttac gccaatgagg gcctcgggtg ggcagggtgg ctgctctccc    300
ctcgaggctc tcggcctaatt tggggcccca atgacccccg gcgaaaatcg cgtaatttgg    360
gtaagggtcat cgatacccta acgtgcggat tcgccgatct catgggggtat atcccgctcg    420
taggcggccc cattgggggc gtcgcaaggg ctctcgaca cgggtgtgagg gtccttgagg    480
acggggtaaa ctatgcaaca gggaattta      509
```

<210> 44

<211> 169

<212> PRT

<213> hepatitis C virus

<400> 44

```
Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn
1          5          10          15
```

```
Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly
          20          25          30
```

```
Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Met Gly Val Arg Ala
          35          40          45
```

```
Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro
          50          55          60
```

```
Ile Pro Lys Ala Arg Gln Pro Thr Gly Arg Ser Trp Gly Gln Pro Gly
          65          70          75          80
```

```
Tyr Pro Trp Pro Leu Tyr Ala Asn Glu Gly Leu Gly Trp Ala Gly Trp
          85          90          95
```

```
Leu Leu Ser Pro Arg Gly Ser Arg Pro Asn Trp Gly Pro Asn Asp Pro
          100          105          110
```

Arg Arg Lys Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys  
 115 120 125

Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Gly Pro Ile  
 130 135 140

Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp  
 145 150 155 160

Gly Val Asn Tyr Ala Thr Gly Asn Leu  
 165

<210> 45  
 <211> 580  
 <212> DNA  
 <213> hepatitis C virus

<400> 45  
 aacgtgcgga ttcgccgatc tcatggggta tatcccgtc gtaggcggcc ccattggggg 60  
 cgtcgcaagg gctctcgac acggtgtgag ggtccttgag gacggggtaa actatgcaac 120  
 agggaattta cccggttgct ctttctctat ctttattctt gctcttctct cgtgtctgac 180  
 cgttccggcc tctgcagttc cctaccgaaa tgctctctggg atttatcatg ttaccaatga 240  
 ttgccc aaac tcttccatag tctatgaggc agataacctg atcctacacg cacctgggtg 300  
 cgtgccttgt gtcatgacag gtaatgtgag tagatgctgg gtccaaatta cccctacact 360  
 gtcagccccg agcctcggag cagtcacggc tcctcttcgg agagccgttg actacctagc 420  
 gggaggggct gccctctgct ccgcgttata cgtaggagac gcgtgtgggg cactattctt 480  
 ggtaggcaa atgttcacct ataggcctcg ccagcacgct acggtgcaga actgcaactg 540  
 ttccatttac agtggccatg ttaccggcca ccgatggca 580

<210> 46  
 <211> 193  
 <212> PRT  
 <213> hepatitis C virus

<400> 46

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Gly  
 1 5 10 15

Pro Ile Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu  
 20 25 30

Glu Asp Gly Val Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe  
 35 40 45

Ser Ile Phe Ile Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser  
 50 55 60

Ala Val Pro Tyr Arg Asn Ala Ser Gly Ile Tyr His Val Thr Asn Asp  
 65 70 75 80

Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Asp Asn Leu Ile Leu His  
 85 90 95

Ala Pro Gly Cys Val Pro Cys Val Met Thr Gly Asn Val Ser Arg Cys  
 100 105 110

Trp Val Gln Ile Thr Pro Thr Leu Ser Ala Pro Ser Leu Gly Ala Val  
 115 120 125

Thr Ala Pro Leu Arg Arg Ala Val Asp Tyr Leu Ala Gly Gly Ala Ala  
 130 135 140

Leu Cys Ser Ala Leu Tyr Val Gly Asp Ala Cys Gly Ala Leu Phe Leu  
 145 150 155 160

Val Gly Gln Met Phe Thr Tyr Arg Pro Arg Gln His Ala Thr Val Gln  
 165 170 175

Asn Cys Asn Cys Ser Ile Tyr Ser Gly His Val Thr Gly His Arg Met  
 180 185 190

Ala

<210> 47  
 <211> 580  
 <212> DNA  
 <213> hepatitis C virus

<400> 47  
 aacgtgcgga ttcgccgatc tcatggggta tatcccgtc gtaggcggcc ccattggggg 60  
 cgtcgcaagg gctctgcac acggtgtgag ggtccttgag gacggggtaa actatgcaac 120  
 agggaattta cccggttgct ctttctctat ctttattctt gctcttctct cgtgtctgac 180

cgttccggcc tctgcagttc cctaccgaaa tgcctctggg atttatcatg ttaccaatga 240  
 ttgccc aaac tcttccatag tctatgaggc agataacctg atcctacacg cacctgggtg 300  
 cgtgccttgt gtcatgacag gtaatgtgag tagatgctgg gtccaaatta cccctacact 360  
 gtcagccccg agcctcggag cagtcacggc tcctcttcgg agagccggtg actacctagc 420  
 gggaggggct gccctctgct ccgcgttata cgtaggagac gcgtgtgggg cactattctt 480  
 ggtaggccaa atgttcacct ataggcctcg ccagcacgct acggtgcaga actgcaactg 540  
 ttccatttac agtggccatg ttaccggcca ccgatggca 580

<210> 48  
 <211> 193  
 <212> PRT  
 <213> hepatitis C virus

<400> 48

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Gly  
 1 5 10 15

Pro Ile Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu  
 20 25 30

Glu Asp Gly Val Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe  
 35 40 45

Ser Ile Phe Ile Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser  
 50 55 60

Ala Val Pro Tyr Arg Asn Ala Ser Gly Ile Tyr His Val Thr Asn Asp  
 65 70 75 80

Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Asp Asn Leu Ile Leu His  
 85 90 95

Ala Pro Gly Cys Val Pro Cys Val Met Thr Gly Asn Val Ser Arg Cys  
 100 105 110

Trp Val Gln Ile Thr Pro Thr Leu Ser Ala Pro Ser Leu Gly Ala Val  
 115 120 125

Thr Ala Pro Leu Arg Arg Ala Val Asp Tyr Leu Ala Gly Gly Ala Ala  
 130 135 140

Leu Cys Ser Ala Leu Tyr Val Gly Asp Ala Cys Gly Ala Leu Phe Leu  
 145 150 155 160

Val Gly Gln Met Phe Thr Tyr Arg Pro Arg Gln His Ala Thr Val Gln  
 165 170 175

Asn Cys Asn Cys Ser Ile Tyr Ser Gly His Val Thr Gly His Arg Met  
 180 185 190

Ala

<210> 49  
 <211> 959  
 <212> DNA  
 <213> hepatitis C virus

<400> 49  
 ccatgagcac gaatcctaaa cctcaaagaa aaacaaaaag aaacaccaac cgtcgcccac 60  
 aggacgtcaa gttcccgggc ggtggtcaga tcggtggcgg agtttacttg ttgccgcgca 120  
 ggggccctag gatgggtgtg cgcgcgactc ggaagacttc ggaacggtcg caaccccgctg 180  
 gacggcgctca gcctattccc aaggcgcgcc agcccacggg ccggtcctgg ggtcaacccg 240  
 ggtacccttg gcccctttac gccaatgagg gcctcgggtg ggcaggggtg ctgctctccc 300  
 ctcgaggctc tcggcctaatt tggggcccca atgacccccg gcgaaaatcg cgtaatttgg 360  
 gtaaggtcat cgatacccta acgtgcggat tcgccgatct catgggggtat atcccgctcg 420  
 tagggcgccc cattgggggc gtcgcaaggc ctctcgcaca cgggtgtgagg gtccttgagg 480  
 acggggtaaa ctatgcaaca gggaatttac ccggttgctc tttctctatc tttattcttg 540  
 ctcttctctc gtgtctgacc gttccggcct ctgcagttcc ctaccgaaat gcctctggga 600  
 tttatcatgt taccaatgat tgcccaaact cttccatagt ctatgaggca gataacctga 660  
 tcctacacgc acctggttgc gtgccttggtg tcatgacagg taatgtgagt agatgctggg 720  
 tccaaattac ccctacactg tcagccccga gcctcggagc agtcacggct cctcttcgga 780  
 gagccgttga ctacctagcg ggaggggctg ccctctgctc cgcgttatac gtaggagacg 840  
 cgtgtggggc actattcttg gtagggccaaa tgttcaccta taggcctcgc cagcacgcta 900  
 cgggtgcagaa ctgcaactgt tccatttaca gtggccatgt taccggccac cggatggca 959

<210> 50

<211> 319  
<212> PRT  
<213> hepatitis C virus

<400> 50

Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn  
1 5 10 15

Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly  
20 25 30

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Met Gly Val Arg Ala  
35 40 45

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro  
50 55 60

Ile Pro Lys Ala Arg Gln Pro Thr Gly Arg Ser Trp Gly Gln Pro Gly  
65 70 75 80

Tyr Pro Trp Pro Leu Tyr Ala Asn Glu Gly Leu Gly Trp Ala Gly Trp  
85 90 95

Leu Leu Ser Pro Arg Gly Ser Arg Pro Asn Trp Gly Pro Asn Asp Pro  
100 105 110

Arg Arg Lys Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys  
115 120 125

Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Gly Pro Val  
130 135 140

Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp  
145 150 155 160

Gly Val Asn Tyr Pro Thr Gly Asn Leu Pro Gly Cys Ser Phe Ser Ile  
165 170 175

Phe Ile Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser Ala Val  
180 185 190

Pro Tyr Arg Asn Ala Ser Gly Ile Tyr His Val Thr Asn Asp Cys Pro  
195 200 205

Asn Ser Ser Ile Val Tyr Glu Ala Asp Asn Leu Ile Leu His Ala Pro  
 210 215 220

Gly Cys Val Pro Cys Val Met Thr Gly Asn Val Ser Arg Cys Trp Val  
 225 230 235 240

Gln Ile Thr Pro Thr Leu Ser Ala Pro Ser Leu Gly Ala Val Thr Ala  
 245 250 255

Pro Leu Arg Arg Ala Val Asp Tyr Leu Ala Gly Gly Ala Ala Leu Cys  
 260 265 270

Ser Ala Leu Tyr Val Gly Asp Ala Cys Gly Ala Leu Phe Leu Val Gly  
 275 280 285

Gln Met Phe Thr Tyr Arg Pro Arg Gln His Ala Thr Val Gln Asn Cys  
 290 295 300

Asn Cys Ser Ile Tyr Ser Gly His Val Thr Gly His Arg Met Ala  
 305 310 315

<210> 51  
 <211> 959  
 <212> DNA  
 <213> hepatitis C virus

<400> 51  
 ccatgagcac gaatcctaaa cctcaaagaa aaaccaaag aaacaccaac cgtcgccac 60  
 aggacgtcaa gttcccgggc ggtggtcaga tcgttggcgg agtttacttg ttgccgcgca 120  
 ggggccctag gatgggtgtg cgcgcgactc ggaagacttc ggaacggtcg caaccccg 180  
 gacggcgctca gcctattccc aaggcgcgcc agcccacggg ccggtcctgg ggtcaaccg 240  
 ggtacccttg gcccctttac gccaatgagg gctcgggtg ggcaggggtg ctgctctccc 300  
 ctcgaggctc tcggcctaatt tggggcccca atgacccccg gcgaaaatcg cgtaatttgg 360  
 gtaaggtcat cgatacccta acgtgcggat tcgccgatct catgggggtac atcccgctcg 420  
 taggcggccc cgttgggggc gtcgcaaggg ctctcgaca cgggtgtgagg gtccttgagg 480  
 acggggtaaa ctatccaaca gggaatttac ccggttgctc tttctctatc tttattcttg 540  
 ctcttctctc gtgtctgacc gttccggcct ctgcagttcc ctaccgaaat gcctctggga 600  
 tttatcatgt taccaatgat tgcccaaact cttccatagt ctatgaggca gataacctga 660

tcctacacgc acctggttgc gtgccttgtg tcatgacagg taatgtgagt agatgctggg 720  
 tccaaattac ccctacactg tcagccccga gcctcggagc agtcacggct cctcttcgga 780  
 gagccgttga ctacctagcg ggaggggctg ccctctgctc cgcgttatac gtaggagacg 840  
 cgtgtggggc actattcttg gtaggcctc tgttcaccta taggcctcgc cagcacgcta 900  
 cgggtgcagaa ctgcaactgt tccatttaca gtggccatgt taccggccac cggatggca 959

<210> 52  
 <211> 319  
 <212> PRT  
 <213> hepatitis C virus

<400> 52

Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn  
 1 5 10 15

Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly  
 20 25 30

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Met Gly Val Arg Ala  
 35 40 45

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro  
 50 55 60

Ile Pro Lys Ala Arg Gln Pro Thr Gly Arg Ser Trp Gly Gln Pro Gly  
 65 70 75 80

Tyr Pro Trp Pro Leu Tyr Ala Asn Glu Gly Leu Gly Trp Ala Gly Trp  
 85 90 95

Leu Leu Ser Pro Arg Gly Ser Arg Pro Asn Trp Gly Pro Asn Asp Pro  
 100 105 110

Arg Arg Lys Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys  
 115 120 125

Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Gly Pro Val  
 130 135 140

Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp  
 145 150 155 160



Gly Val Asn Tyr Pro Thr Gly Asn Leu Pro Gly Cys Ser Phe Ser Ile  
165 170 175

Phe Ile Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser Ala Val  
180 185 190

Pro Tyr Arg Asn Ala Ser Gly Ile Tyr His Val Thr Asn Asp Cys Pro  
195 200 205

Asn Ser Ser Ile Val Tyr Glu Ala Asp Asn Leu Ile Leu His Ala Pro  
210 215 220

Gly Cys Val Pro Cys Val Met Thr Gly Asn Val Ser Arg Cys Trp Val  
225 230 235 240

Gln Ile Thr Pro Thr Leu Ser Ala Pro Ser Leu Gly Ala Val Thr Ala  
245 250 255

Pro Leu Arg Arg Ala Val Asp Tyr Leu Ala Gly Gly Ala Ala Leu Cys  
260 265 270

Ser Ala Leu Tyr Val Gly Asp Ala Cys Gly Ala Leu Phe Leu Val Gly  
275 280 285

Gln Met Phe Thr Tyr Arg Pro Arg Gln His Ala Thr Val Gln Asn Cys  
290 295 300

Asn Cys Ser Ile Tyr Ser Gly His Val Thr Gly His Arg Met Ala  
305 310 315

<210> 53  
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<212> DNA  
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ggggccctag gatgggtgtg cgcgcgactc ggaagacttc ggaacggtcg caaccccgtg 180  
gacggcgctca gcctattccc aaggcgcgcc agcccacggg ccggtcctgg ggtcaaccgg 240  
ggtacccttg gcccctttac gccaatgagg gcctcgggtg ggcagggtgg ctgctctccc 300

ctcgaggctc tcggccta atggggcccca atgacccccg gcgaaaatcg cgtaatttgg 360  
gtaaggtcat cgatacccta acgtgcggat tcgccgatct catgggggtay atcccgcctcg 420  
taggcggccc crtggggggc gtcgcaaggg ctctcgacaca cgggtgtgagg gtccttgagg 480  
acggggtaaa ctatscaaca gggaatttac ccggttgctc tttctctatc tttattcttg 540  
ctcttctctc gtgtctgacc gttccggcct ctgcagttcc ctaccgaaat gcctctggga 600  
tttatcatgt taccaatgat tgcccaaact cttccatagt ctatgaggca gataacctga 660  
tcctacacgc acctggttgc gtgccttgtg tcatgacagg taatgtgagt agatgctggg 720  
tccaaattac ccctacactg tcagccccga gcctcggagc agtcacggct cctcttcgga 780  
gagccgttga ctacctagcg ggaggggctg ccctctgctc cgcgttatac gtaggagacg 840  
cgtgtggggc actattcttg gtaggccaaa tgttcaccta taggcctcgc cagcacgcta 900  
cgggtgcagaa ctgcaactgt tccatttaca gtggccatgt taccggccac cggatggca 959

<210> 54  
<211> 319  
<212> PRT  
<213> hepatitis C virus

<400> 54

Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn  
1 5 10 15

Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly  
20 25 30

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Met Gly Val Arg Ala  
35 40 45

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro  
50 55 60

Ile Pro Lys Ala Arg Gln Pro Thr Gly Arg Ser Trp Gly Gln Pro Gly  
65 70 75 80

Tyr Pro Trp Pro Leu Tyr Ala Asn Glu Gly Leu Gly Trp Ala Gly Trp  
85 90 95

Leu Leu Ser Pro Arg Gly Ser Arg Pro Asn Trp Gly Pro Asn Asp Pro  
100 105 110

Arg Arg Lys Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys  
 115 120 125

Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Gly Pro Val  
 130 135 140

Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp  
 145 150 155 160

Gly Val Asn Tyr Pro Thr Gly Asn Leu Pro Gly Cys Ser Phe Ser Ile  
 165 170 175

Phe Ile Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser Ala Val  
 180 185 190

Pro Tyr Arg Asn Ala Ser Gly Ile Tyr His Val Thr Asn Asp Cys Pro  
 195 200 205

Asn Ser Ser Ile Val Tyr Glu Ala Asp Asn Leu Ile Leu His Ala Pro  
 210 215 220

Gly Cys Val Pro Cys Val Met Thr Gly Asn Val Ser Arg Cys Trp Val  
 225 230 235 240

Gln Ile Thr Pro Thr Leu Ser Ala Pro Ser Leu Gly Ala Val Thr Ala  
 245 250 255

Pro Leu Arg Arg Ala Val Asp Tyr Leu Ala Gly Gly Ala Ala Leu Cys  
 260 265 270

Ser Ala Leu Tyr Val Gly Asp Ala Cys Gly Ala Leu Phe Leu Val Gly  
 275 280 285

Gln Met Phe Thr Tyr Arg Pro Arg Gln His Ala Thr Val Gln Asn Cys  
 290 295 300

Asn Cys Ser Ile Tyr Ser Gly His Val Thr Gly His Arg Met Ala  
 305 310 315

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 attcttggga taggcactgt ccttgaccag gcagagacgg ctggagctag gctcgtcgtc 180  
 ttggccacgg ncacccctcc cggcagtgtg acaacgcccc accccaacat cgaggaagtg 240  
 gccctgcctc aggaggggga ggttccttc tacggcagag ccattccctt tgcttttata 300  
 aagggtggta ggcattctcat cttctgccat tccaagaaaa attgtgatga actc 354

<210> 56  
 <211> 118  
 <212> PRT  
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<220>  
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 <223> "Xaa" is any amino acid

<400> 56

Thr Thr Gly Ala Ser Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala  
 1 5 10 15

Asp Gly Gly Cys Ser Gly Gly Ala His Asp Val Ile Ile Cys Asp Glu  
 20 25 30

Cys His Ser Gln Asp Ala Thr Thr Ile Leu Gly Ile Gly Thr Val Leu  
 35 40 45

Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Xaa  
 50 55 60

Thr Pro Pro Gly Ser Val Thr Thr Pro His Pro Asn Ile Glu Glu Val  
 65 70 75 80

Ala Leu Pro Gln Glu Gly Glu Val Pro Phe Tyr Gly Arg Ala Ile Pro  
 85 90 95

Leu Ala Phe Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys  
 100 105 110

Lys Asn Cys Asp Glu Leu  
 115

<210> 57  
 <211> 354  
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<220>  
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 <223> "n" is any nucleotide

<220>  
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 <222> (276)..(276)  
 <223> "n" is any nucleotide

<400> 57  
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 tcaggcggcg cgtatgacgt gatcatatgc gacgagtgcc attcccagga cgccaccacc 120  
 attcttggga taggcactgt ccttgaccag gcagagacgg ctggagctag gctcgtcgtc 180  
 ttggnacagg ncaccctcc cggcagtgtg acaacgcccc accccaacat cgaggaagtg 240  
 gccctgcctc aggaggggga ggttccttc tacggnagag ccattcccct tgcttttata 300  
 aagggtggta ggcattcat cttctgcat tccaagaaaa aatgtgatga actt 354

<210> 58  
 <211> 133  
 <212> PRT  
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<220>  
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 <222> (62)..(62)  
 <223> "Xaa" is any amino acid

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<220>  
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<400> 58

Thr Thr Gly Ala Ser Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala  
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Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Val Ile Ile Cys Asp Glu  
20 25 30

Cys His Ser Gln Asp Ala Thr Thr Ile Leu Gly Ile Gly Thr Val Leu  
35 40 45

Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu Xaa Thr Xaa  
50 55 60

Thr Pro Pro Gly Ser Val Thr Thr Pro His Pro Asn Ile Glu Glu Val  
65 70 75 80

Ala Leu Pro Gln Glu Gly Glu Val Pro Phe Tyr Xaa Arg Ala Ile Pro  
85 90 95

Leu Ala Phe Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys  
100 105 110

Lys Lys Cys Asp Glu Leu Arg Gln Ala Thr Asp Gln Pro Gly Arg Glu  
115 120 125

Arg Pro Trp Glu Tyr  
130

<210> 59  
<211> 357  
<212> DNA  
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<220>  
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<222> (38)..(38)  
<223> "n" is any nucleotide

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<222> (76)..(76)  
<223> "n" is any nucleotide

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<400> 59  
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gttgtggcga ccctgncgnc ctactgcttg acggtggggt cggtagccat agtcggtagg 120  
atcatcctct ctgggaaacc tgccatcatt nccgatagg aggtattata ccagcaattt 180  
gatgagatgg aggagtgtc ggccctcggtg ccctatatgg acgaaacacg tnccattgcc 240  
ggacaattca aagagaaagt gtcggttc atcagcacga ccggccagaa ggctgaaact 300  
ctgaagccgg cagccacgtc tgtgtggaac aaggctgatc agttctggnc cacatac 357

<210> 60  
<211> 128  
<212> PRT  
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<223> "Xaa" is any amino acid

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 <223> "Xaa" is any amino acid

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 <223> "Xaa" is any amino acid

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 <223> "Xaa" is any amino acid

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 <223> "Xaa" is any amino acid

<400> 60

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		20						25					30		

Gly	Ser	Val	Ala	Ile	Val	Gly	Arg	Ile	Ile	Leu	Ser	Gly	Lys	Pro	Ala
		35					40					45			

Ile	Ile	Xaa	Asp	Arg	Glu	Val	Leu	Tyr	Gln	Gln	Phe	Asp	Glu	Met	Glu
	50					55					60				

Glu	Cys	Ser	Ala	Ser	Leu	Pro	Tyr	Met	Asp	Glu	Thr	Arg	Xaa	Ile	Ala
65					70					75				80	

Gly	Gln	Phe	Lys	Glu	Lys	Val	Leu	Gly	Phe	Ile	Ser	Thr	Thr	Gly	Gln
			85					90						95	

Lys	Ala	Glu	Thr	Leu	Lys	Pro	Ala	Ala	Thr	Ser	Val	Trp	Asn	Lys	Ala
			100					105					110		

Asp	Gln	Phe	Trp	Xaa	Thr	Tyr	Met	Trp	Asn	Phe	Ile	Ser	Gly	Ile	Gln
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<223>	"n" is any nucleotide		
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atcatcctct ctgggaaacc tgccatcatt cccgataggg aggcattata ccancaattt			180
gatgagatgg aggagtgtc ggccctcggtg ccctatatgg acgagacacg tgccattgcc			240
ggacaattca aagagaaagt gtcgggcttc atcagcacga ccggccagaa ggctgaaact			300
ctgaagccgg cagccacgtc tgtgtggaac aaggctganc agttctgggc cacatac			357
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<223> "Xaa" is any amino acid

<400> 62

Met Ala Cys Met Ser Ala Asp Leu Glu Val Ile Thr Xaa Thr Trp Val  
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Leu Val Gly Gly Val Val Ala Xaa Leu Ala Ala Tyr Cys Leu Thr Val  
20 25 30

Gly Ser Val Ala Ile Val Gly Arg Ile Ile Leu Ser Gly Lys Pro Ala  
35 40 45

Ile Ile Pro Asp Arg Glu Ala Leu Tyr Xaa Gln Phe Asp Glu Met Glu  
50 55 60

Glu Cys Ser Ala Ser Leu Pro Tyr Met Asp Glu Thr Arg Ala Ile Ala  
65 70 75 80

Gly Gln Phe Lys Glu Lys Val Leu Gly Phe Ile Ser Thr Thr Gly Gln  
85 90 95

Lys Ala Glu Thr Leu Lys Pro Ala Ala Thr Ser Val Trp Asn Lys Ala  
100 105 110

Xaa Gln Phe Trp Ala Thr Tyr Met Trp Asn Phe Ile Ser Gly Ile Gln  
115 120 125

<210> 63  
<211> 28  
<212> DNA  
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<220>  
 <221> misc\_feature  
 <223> HCPrl61

<400> 63  
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<210> 64  
 <211> 28  
 <212> DNA  
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<220>  
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 <223> HCPrl62

<400> 64  
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<210> 65  
 <211> 28  
 <212> DNA  
 <213> artificial

<220>  
 <221> misc\_feature  
 <223> HCPrl63

<400> 65  
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<210> 66  
 <211> 28  
 <212> DNA  
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<220>  
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 <223> HCPrl64

<400> 66  
 gagctgctct gtcctcctcg acgccgca 28

<210> 67  
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<220>

<221> misc\_feature  
<223> HCPr23

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<210> 68  
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<220>  
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<223> HCPr54

<400> 68  
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<210> 69  
<211> 24  
<212> DNA  
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<220>  
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<223> HCPr116

<400> 69  
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<210> 70  
<211> 33  
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<220>  
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<223> HCPr66

<400> 70  
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<210> 71  
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<220>  
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<223> HCPrl18

<400> 71

actagtcgac taytgatccr ctatrwartt ccacat

36

<210> 72

<211> 25

<212> DNA

<213> artificial

<220>

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<223> HCPrl17

<400> 72

ttttaaatac atcgcrctgc atgca

25

<210> 73

<211> 36

<212> DNA

<213> artificial

<220>

<221> misc\_feature

<223> HCPrl19

<400> 73

actagtcgac tarttgcata gcckrttcat ccaytg

36

<210> 74

<211> 34

<212> DNA

<213> artificial

<220>

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<223> HCPrl31

<400> 74

ggaattctag acctctggga ygaraytgga artg

34

<210> 75

<211> 31

<212> DNA

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<220>

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<223> HCPrl30

<400> 75  
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<210> 76  
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<223> HCPrl34

<400> 76  
catatagatg cccacttcct atc 23

<210> 77  
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<212> DNA  
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<223> HCPrl3

<400> 77  
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<210> 78  
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<223> HCPrl4

<400> 78  
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<210> 79  
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<210> 80  
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<220>  
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<223> HCPPr52

<400> 80  
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<210> 81  
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<223> HCPPr41

<400> 81  
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<210> 82  
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<220>  
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<223> HCPPr40

<400> 82  
ctattaaaga tagagaaaga gcaaccggg 29

<210> 83  
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<212> PRT  
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<400> 83

Leu Glu Trp Arg Asn Thr Ser Gly Leu Tyr Val Leu  
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<210> 84  
<211> 12  
<212> PRT  
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<400> 84

Val Pro Tyr Arg Asn Ala Ser Gly Ile Tyr His Val  
1 5 10

<210> 85  
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<212> PRT  
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<400> 85

Val Tyr Glu Ala Asp Asp Val Ile Leu His Thr  
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<210> 86  
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<400> 86

Val Tyr Glu Ala Asp Asn Leu Ile Leu His Ala  
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<210> 87  
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<212> PRT  
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<400> 87

Val Gln Asp Gly Asn Thr Ser Thr Cys Trp Thr Pro Val  
1 5 10

<210> 88  
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<212> PRT  
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<400> 88

Val Met Thr Gly Asn Val Ser Arg Cys Trp Val Gln Ile  
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<210> 89



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Val Arg Tyr Val Gly Ala Thr Thr Ala Ser  
1 5 10

<210> 90  
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<400> 90

Ala Pro Ser Leu Gly Ala Val Thr Ala Pro  
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<210> 91  
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Arg Pro Arg Arg His Gln Thr Val Gln Thr  
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<210> 92  
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<400> 92

Arg Pro Arg Gln His Ala Thr Val Gln Asn  
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<210> 93  
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Gln Pro Thr Gly Arg Ser Trp Gly Gln  
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Val Gln Asp Gly Asn Thr Ser Thr  
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<210> 95

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<400> 95

Val Gln Asp Gly Asn Thr Ser Ala  
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<210> 96

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 96

Val Lys Tyr Val Gly Ala Thr Thr Ala Ser  
1 5 10

<210> 97

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 97

Leu Gly Gly Lys Pro Ala Ile Val Pro Asp Lys Glu Val Leu Tyr Gln  
1 5 10 15

Gln Tyr Asp Glu  
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<210> 98

<211> 20

<212> PRT

<213> hepatitis C virus

<400> 98

Leu Gly Gly Lys Pro Ala Leu Val Pro Asp Lys Glu Val Leu Tyr Gln  
1 5 10 15

Gln Tyr Asp Glu

20

<210> 99  
<211> 20  
<212> PRT  
<213> hepatitis C virus

<400> 99

Ser Gln Ala Ala Pro Tyr Ile Glu Gln Ala Gln Val Ile Ala His Gln  
1 5 10 15

Phe Lys Glu Lys  
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<210> 100  
<211> 20  
<212> PRT  
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<400> 100

Ile Ala His Gln Phe Lys Glu Lys Val Leu Gly Leu Leu Gln Arg Ala  
1 5 10 15

Thr Gln Gln Gln  
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<210> 101  
<211> 20  
<212> PRT  
<213> hepatitis C virus

<400> 101

Ile Ala His Gln Phe Lys Glu Lys Ile Leu Gly Leu Leu Gln Arg Ala  
1 5 10 15

Thr Gln Gln Gln  
20

<210> 102  
<211> 20  
<212> PRT  
<213> hepatitis C virus

<400> 102

Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Ala Leu Tyr Gln  
1 5 10 15

Gln Phe Asp Glu  
20

<210> 103  
<211> 20  
<212> PRT  
<213> hepatitis C virus

<400> 103

Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Gln  
1 5 10 15

Gln Phe Asp Glu  
20

<210> 104  
<211> 20  
<212> PRT  
<213> hepatitis C virus

<400> 104

Ser Ala Ser Leu Pro Tyr Met Asp Glu Thr Arg Ala Ile Ala Gly Gln  
1 5 10 15

Phe Lys Glu Lys  
20

<210> 105  
<211> 20  
<212> PRT  
<213> hepatitis C virus

<400> 105

Ile Ala Gly Gln Phe Lys Glu Lys Val Leu Gly Phe Ile Ser Thr Thr  
1 5 10 15

Gly Gln Lys Ala  
20

<210> 106  
<211> 340  
<212> DNA  
<213> hepatitis C virus

<400> 106

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 catgcataac agcaaggagg acctgtgcgg gtatcgcaga tgtcgcgcaa gcggcgctcta 180  
 caccaccagc ttcgggaaca cactgacgtg ctacctcaaa gcctcagccg ctatcaaagc 240  
 ggcggggctg agagactgca ccatgttggt ctgtggtgat gacctggttg tcatcgctga 300  
 gagcgatggc gtagaggagg acaaacgacc cctcggagcc 340

<210> 107  
 <211> 113  
 <212> PRT  
 <213> hepatitis C virus

<400> 107

Ser Thr Val Thr Glu Lys Asp Ile Arg Val Glu Glu Glu Val Tyr Gln  
 1 5 10 15

Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Ala Ile Thr Ala Leu Thr  
 20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met His Asn Ser Lys Gly Asp Leu  
 35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe  
 50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Ile Lys Ala  
 65 70 75 80

Ala Gly Leu Arg Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val  
 85 90 95

Val Ile Ala Glu Ser Asp Gly Val Glu Glu Asp Lys Arg Pro Leu Gly  
 100 105 110

Ala

<210> 108  
 <211> 340  
 <212> DNA  
 <213> hepatitis C virus

<400> 108  
 ctccactgta accgaaaagg acatcagggg cgaggaggag gtatatcagt gttgtgacct 60  
 ggagcccgag gcccgagag caattaccgc cctaacagag agactctacg tgggcgggtcc 120  
 catgcataac agcagggggag acctgtgcgg gtatcgcaga tgccgtgcga gcggcgctcta 180  
 caccaccagc ttcgggaaca cactgacgtg ctatctcaaa gcctcagccg ctatcagagc 240  
 ggcgggggctg agagactgca ccatgttggt ctgtggtgat gacctgggtcg tcattgctga 300  
 aagcgatggc gtagaggagg acaaacgagc cctcggagcc 340

<210> 109  
 <211> 113  
 <212> PRT  
 <213> hepatitis C virus

<400> 109

Ser Thr Val Thr Glu Lys Asp Ile Arg Val Glu Glu Glu Val Tyr Gln  
 1 5 10 15

Cys Cys Asp Leu Glu Pro Glu Ala Arg Arg Ala Ile Thr Ala Leu Thr  
 20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met His Asn Ser Arg Gly Asp Leu  
 35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe  
 50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Ile Arg Ala  
 65 70 75 80

Ala Gly Leu Arg Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val  
 85 90 95

Val Ile Ala Glu Ser Asp Gly Val Glu Glu Asp Lys Arg Ala Leu Gly  
 100 105 110

Ala

<210> 110  
 <211> 340  
 <212> DNA  
 <213> hepatitis C virus

<400> 110  
ctccactgta accgaaaaag acatcagggg cgaggaggag gtatatcagt gttgtgacct 60  
ggagcccgaa gcccgcaagg taattaccgc cctaacagag agactctatg tgggcgggtcc 120  
catgcataat agcaaaggag acctgtgcgg gtatcgcaga tgccgcgcaa ggggcgtcta 180  
caccaccagc ttcgggaaca cactgacgtg ctatctcaaa gcctcagccg ccatcagggc 240  
gtcagggctg agagactgca ctatgctggg ctatggtgac gacctggtcg tcattgccga 300  
gagcgatggc gtagaggagg acaaacgagc cctcggagtc 340

<210> 111  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 111

Ser Thr Val Thr Glu Lys Asp Ile Arg Val Glu Glu Glu Val Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Val Ile Thr Ala Leu Thr  
20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met His Asn Ser Lys Gly Asp Leu  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe  
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Ile Arg Ala  
65 70 75 80

Ser Gly Leu Arg Asp Cys Thr Met Leu Val Tyr Gly Asp Asp Leu Val  
85 90 95

Val Ile Ala Glu Ser Asp Gly Val Glu Glu Asp Lys Arg Ala Leu Gly  
100 105 110

Val

<210> 112  
<211> 340  
<212> DNA

<213> hepatitis C virus

<400> 112

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ctccactgta accgaaaagg acatcagggg cgaggaggag gtgtatcagt gttgtgacct      60
ggagcccgag gcccgcaagg caattactgc cctaacagag agactctatg tgggcgggtcc    120
catgcataac agcaagggag acctgtgtgg gtatcgcaga tgccgcgcaa gggcggtcta    180
caccaccagc ttcgggaaca cactgacgtg ctacctcaaa gcctcagccg ctatcagagc    240
ggcgggggctg agagactgca ccatgttggt ctgtggtgat gacctggtcg tcatcgctga    300
gagcgatggc gttgaggagg acaaacgagc cctcggagcc                        340
```

<210> 113

<211> 113

<212> PRT

<213> hepatitis C virus

<400> 113

```
Ser Thr Val Thr Glu Lys Asp Ile Arg Val Glu Glu Glu Val Tyr Gln
1          5          10          15
```

```
Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Ala Ile Thr Ala Leu Thr
          20          25          30
```

```
Glu Arg Leu Tyr Val Gly Gly Pro Met His Asn Ser Lys Gly Asp Leu
          35          40          45
```

```
Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe
          50          55          60
```

```
Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Ile Arg Ala
65          70          75          80
```

```
Ala Gly Leu Arg Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val
          85          90          95
```

```
Val Ile Ala Glu Ser Asp Gly Val Glu Glu Asp Lys Arg Ala Leu Gly
          100          105          110
```

Ala

<210> 114

<211> 340



<212> DNA  
<213> hepatitis C virus

<400> 114  
ctccacggtg accgaaaggg atatcaggac cgaggaagag atctaccagt gctgcgacct 60  
ggagcccgaa gcccgcaagg tgatatccgc cctaacggaa agactctacg tgggcggtcc 120  
catgtacaac tccaaggggg acctatgcgg gcaacggagg tgccgcgcaa gcggggtcta 180  
caccaccagc ttcgggaaca ctgtaacgtg ttatctcaag gccgttgagg ctactagggc 240  
cgcaggtctg aaaggttgca gcatgctggt ttgtggagac gacttagtcg tcatctgcga 300  
gagcggcggc gtagaggagg atgcaagagc cctccgagcc 340

<210> 115  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 115

Ser Thr Val Thr Glu Arg Asp Ile Arg Thr Glu Glu Glu Ile Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Val Ile Ser Ala Leu Thr  
20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met Tyr Asn Ser Lys Gly Asp Leu  
35 40 45

Cys Gly Gln Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe  
50 55 60

Gly Asn Thr Val Thr Cys Tyr Leu Lys Ala Val Ala Ala Thr Arg Ala  
65 70 75 80

Ala Gly Leu Lys Gly Cys Ser Met Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Ile Cys Glu Ser Gly Gly Val Glu Glu Asp Ala Arg Ala Leu Arg  
100 105 110

Ala

<210> 116

<211> 340  
 <212> DNA  
 <213> hepatitis C virus

<400> 116  
 ctccactgtg actgagagag acatcaaggt cgaagaagaa gtctatcagt gttgtgatct 60  
 ggagcccgag gcccgaagg taatagccgc cctcacggag agactctacg tgggcggccc 120  
 catgcataac agcaaggag acctttgcgg gtatcgtaga tgccgcgcga ggcgcgtata 180  
 caccaccagc ttcgggaaca caatgacgtg ctaccttaag gcctcagcag ccatcagggc 240  
 tgcggggcta aaggattgca ccatgctggt ttgcggtgac gacctagtcg tgatcgccga 300  
 gagcgggtggc gttgaggagg acaaacgagc cctcggagct 340

<210> 117  
 <211> 113  
 <212> PRT  
 <213> hepatitis C virus

<400> 117

Ser Thr Val Thr Glu Arg Asp Ile Lys Val Glu Glu Glu Val Tyr Gln  
 1 5 10 15

Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Val Ile Ala Ala Leu Thr  
 20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met His Asn Ser Lys Gly Asp Leu  
 35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe  
 50 55 60

Gly Asn Thr Met Thr Cys Tyr Leu Lys Ala Ser Ala Ala Ile Arg Ala  
 65 70 75 80

Ala Gly Leu Lys Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val  
 85 90 95

Val Ile Ala Glu Ser Gly Gly Val Glu Glu Asp Lys Arg Ala Leu Gly  
 100 105 110

Ala

<210> 118  
 <211> 574  
 <212> DNA  
 <213> hepatitis C virus

<400> 118  
 acttgcggct ttgccgacct catgggatac atcccgctcg taggcgcccc tgtgggtggc 60  
 gtcgccaggg ccctggcaca cgggtgtagg gctgtggagg acgggatcaa ttatgcgaca 120  
 gggaaatcttc cgggttgctc tttctctatc ttctcttgg cacttctttc gtgctgact 180  
 gttcccacct cggccgtcaa ctatcgcaat gcctcgggca tctatcacat caccaatgac 240  
 tgcccgaact cgagcatagt gtacgagacc gagcaccaca tcctacacct cccaggggtgt 300  
 ttaccctgcg tgagggttgg gaatcagtca cgctgctggg tggccctcac tcccaccgtg 360  
 gcggcgctt acatcggcgc tccgcttgaa tccctcggga gtcagtggga tctgatggta 420  
 ggtgccgcta ctgcgtgctc cgctctttac atcggagacc tgtgcggtgg cgtattcttg 480  
 gttggtcaga tggtctcttt ccagccgagg cgccactgga ctacgcagga ctgcaattgt 540  
 tccatctacg cggggcacgt tacgggccac agga 574

<210> 119  
 <211> 191  
 <212> PRT  
 <213> hepatitis C virus

<400> 119  
 Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala  
 1 5 10 15  
 Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val  
 20 25 30  
 Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe  
 35 40 45  
 Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Thr Ser  
 50 55 60  
 Ala Val Asn Tyr Arg Asn Ala Ser Gly Ile Tyr His Ile Thr Asn Asp  
 65 70 75 80  
 Cys Pro Asn Ser Ser Ile Val Tyr Glu Thr Glu His His Ile Leu His  
 85 90 95

Leu Pro Gly Cys Leu Pro Cys Val Arg Val Gly Asn Gln Ser Arg Cys  
 100 105 110

Trp Val Ala Leu Thr Pro Thr Val Ala Ala Pro Tyr Ile Gly Ala Pro  
 115 120 125

Leu Glu Ser Leu Arg Ser His Val Asp Leu Met Val Gly Ala Ala Thr  
 130 135 140

Ala Cys Ser Ala Leu Tyr Ile Gly Asp Leu Cys Gly Gly Val Phe Leu  
 145 150 155 160

Val Gly Gln Met Phe Ser Phe Gln Pro Arg Arg His Trp Thr Thr Gln  
 165 170 175

Asp Cys Asn Cys Ser Ile Tyr Ala Gly His Val Thr Gly His Arg  
 180 185 190

<210> 120  
 <211> 574  
 <212> DNA  
 <213> hepatitis C virus

<400> 120  
 acgtgcggtt ttgccgacct catgggatac atcccgctcg tgggcgcccc tgtgggtggc 60  
 gtcgccaggg ccttggcaca tgggtgtcagg gccgtggagg acgggattaa ctatgcaaca 120  
 gggaatcttc ccggttgctc cttttctatc ttccttctag cacttctctc gtgcttgact 180  
 gtcccggcct cggcgcagca ctaccggaac atctcgggca tttatcacgt caccaatgac 240  
 tgcccgaact ctagtatagt gtatgaagct gaccatcata tcatgcatct accagggtgt 300  
 gtgccttgcg tgagaaccgg gaacacctcg cgctgctggg ttcctttaac acccactgtg 360  
 gctgccccct atgttggcgc gccgctcgaa tccatgcggc ggcacgtgga cttaatgggtg 420  
 ggtgccgcca ccgtctgctc ggccctgtac atcggagacc tttgcggagg tgtcttctcg 480  
 gtcgggcaga tgttcacctt ccggccgcgc cgccattgga ctaccagga ctgcaactgc 540  
 tctatctatg atggccacat caccggccat agaa 574

<210> 121  
 <211> 191  
 <212> PRT  
 <213> hepatitis C virus

<400> 121

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala  
1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val  
20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe  
35 40 45

Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser  
50 55 60

Ala Gln His Tyr Arg Asn Ile Ser Gly Ile Tyr His Val Thr Asn Asp  
65 70 75 80

Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Asp His His Ile Met His  
85 90 95

Leu Pro Gly Cys Val Pro Cys Val Arg Thr Gly Asn Thr Ser Arg Cys  
100 105 110

Trp Val Pro Leu Thr Pro Thr Val Ala Ala Pro Tyr Val Gly Ala Pro  
115 120 125

Leu Glu Ser Met Arg Arg His Val Asp Leu Met Val Gly Ala Ala Thr  
130 135 140

Val Cys Ser Ala Leu Tyr Ile Gly Asp Leu Cys Gly Gly Val Phe Leu  
145 150 155 160

Val Gly Gln Met Phe Thr Phe Arg Pro Arg Arg His Trp Thr Thr Gln  
165 170 175

Asp Cys Asn Cys Ser Ile Tyr Asp Gly His Ile Thr Gly His Arg  
180 185 190

<210> 122

<211> 574

<212> DNA

<213> hepatitis C virus

<400> 122

acgtgcggct tcgccgacct catgggatac atcccgctcg tgggcgcccc cgttgggggc

60

gtcgccaggg ccctggcgca tggcgtcagg gctgtggagg acgggattaa ctatgcgaca 120  
 gggaatcttc ccggttgctc tttctctatc ttctctctgg cacttctttc gtgcctcact 180  
 gtcccagcgt cagctgagca ctaccggaat gcttcgggca tctatcacat caccaatgac 240  
 tgtccgaatt ccagcgtagt ctatgaaact gaccaccata tattgcactt gccgggggtgc 300  
 gtaccctgcg tgagggcccg gaacgtgtct cgttgctgga cgccggtaac acctacggtg 360  
 gctgccgtat ccatggacgc tccgctcgag tccttcgggc ggcatgtgga cctaattgta 420  
 ggtgcgggcca ccgtgtgttc tgtcctctat gttggagacc tctgtggagg tgctttccta 480  
 gtggggcaga tgttcacctt ccagccgcgt cgccactgga ccacgcagga ttgtaattgc 540  
 tccatctata ctggccatat caccggccac agga 574

<210> 123  
 <211> 191  
 <212> PRT  
 <213> hepatitis C virus

<400> 123

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala  
 1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val  
 20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe  
 35 40 45

Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser  
 50 55 60

Ala Glu His Tyr Arg Asn Ala Ser Gly Ile Tyr His Ile Thr Asn Asp  
 65 70 75 80

Cys Pro Asn Ser Ser Val Val Tyr Glu Thr Asp His His Ile Leu His  
 85 90 95

Leu Pro Gly Cys Val Pro Cys Val Arg Ala Gly Asn Val Ser Arg Cys  
 100 105 110

Trp Thr Pro Val Thr Pro Thr Val Ala Ala Val Ser Met Asp Ala Pro  
 115 120 125

Leu Glu Ser Phe Arg Arg His Val Asp Leu Met Val Gly Ala Ala Thr  
130 135 140

Val Cys Ser Val Leu Tyr Val Gly Asp Leu Cys Gly Gly Ala Phe Leu  
145 150 155 160

Val Gly Gln Met Phe Thr Phe Gln Pro Arg Arg His Trp Thr Thr Gln  
165 170 175

Asp Cys Asn Cys Ser Ile Tyr Thr Gly His Ile Thr Gly His Arg  
180 185 190

<210> 124  
<211> 31  
<212> DNA  
<213> artificial

<220>  
<221> misc\_feature  
<223> HCP206

<400> 124  
tggggatccc gtatgatacc cgctgctttg a 31

<210> 125  
<211> 30  
<212> DNA  
<213> artificial

<220>  
<221> misc\_feature  
<223> HCP207

<400> 125  
ggcgggaattc ctggtcatag cctccgtgaa 30

<210> 126  
<211> 12  
<212> PRT  
<213> hepatitis C virus

<400> 126

Val Asn Tyr Arg Asn Ala Ser Gly Ile Tyr His Ile  
1 5 10

<210> 127  
<211> 12  
<212> PRT  
<213> hepatitis C virus

<400> 127

Gln His Tyr Arg Asn Ile Ser Gly Ile Tyr His Val  
1 5 10

<210> 128  
<211> 12  
<212> PRT  
<213> hepatitis C virus

<400> 128

Glu His Tyr Arg Asn Ala Ser Gly Ile Tyr His Ile  
1 5 10

<210> 129  
<211> 11  
<212> PRT  
<213> hepatitis C virus

<400> 129

Val Tyr Glu Thr Glu His His Ile Leu His Leu  
1 5 10

<210> 130  
<211> 11  
<212> PRT  
<213> hepatitis C virus

<400> 130

Val Tyr Glu Ala Asp His His Ile Met His Leu  
1 5 10

<210> 131  
<211> 11  
<212> PRT  
<213> hepatitis C virus

<400> 131

Val Tyr Glu Thr Asp His His Ile Leu His Leu  
1 5 10

<210> 132  
<211> 13



<212> PRT  
<213> hepatitis C virus

<400> 132

Val Arg Val Gly Asn Gln Ser Arg Cys Trp Val Ala Leu  
1 5 10

<210> 133  
<211> 13  
<212> PRT  
<213> hepatitis C virus

<400> 133

Val Arg Thr Gly Asn Thr Ser Arg Cys Trp Val Pro Leu  
1 5 10

<210> 134  
<211> 13  
<212> PRT  
<213> hepatitis C virus

<400> 134

Val Arg Ala Gly Asn Val Ser Arg Cys Trp Thr Pro Val  
1 5 10

<210> 135  
<211> 10  
<212> PRT  
<213> hepatitis C virus

<400> 135

Ala Pro Tyr Ile Gly Ala Pro Leu Glu Ser  
1 5 10

<210> 136  
<211> 10  
<212> PRT  
<213> hepatitis C virus

<400> 136

Ala Pro Tyr Val Gly Ala Pro Leu Glu Ser  
1 5 10

<210> 137  
<211> 10  
<212> PRT  
<213> hepatitis C virus

<400> 137

Ala Val Ser Met Asp Ala Pro Leu Glu Ser  
1 5 10

<210> 138

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 138

Gln Pro Arg Arg His Trp Thr Thr Gln Asp  
1 5 10

<210> 139

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 139

Arg Pro Arg Arg His Trp Thr Thr Gln Asp  
1 5 10

<210> 140

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 140

Arg Pro Arg Arg His Trp Thr Thr Gln Asp  
1 5 10

<210> 141

<211> 23

<212> DNA

<213> artificial

<220>

<221> misc\_feature

<223> HCPrl09

<400> 141

tgggatatga tgatgaactg gtc

23

<210> 142

<211> 24

<212> DNA

<213> artificial

<220>

<221> misc\_feature

<223> HCPrl4

<400> 142

ccaggtacaa ccgaaccaat tgcc

24

<210> 143

<211> 957

<212> DNA

<213> hepatitis C virus

<400> 143

atgagcacaa atcctaaacc tcaaagaaaa accaaaagaa acactaaccg ccgcccacag 60

gacgtcaagt tcccgggagg tggccagatc gttgggtggag tatacttggt gccgcgcagg 120

ggcccccggt tgggtgtgag cgcgacgagg aaaacttccg agcgggtccca gccacgtggg 180

aggcgccagc ccatcccaa agatcggcgc cccactggca agtcctgggg aaaaccagga 240

tacccttggc ccctgtacgg gaatgagggc ctcggtggg caggggtggct cctgtcccc 300

cgaggggtctc gcccgatcat gggcccaact gacccccggc acaggtcacg caacttgggt 360

aaggtcatcg atacccttac gtgtggcttt gccgacctca tggggtacat ccctgtcgtc 420

ggcgccccag ttggtggtgt cgccagagct ctgcgcatg gcgtgagagt tctggaagac 480

gggataaact atgcaacagg gaacttgccc gggtgctcct tttctatctt cttattggcc 540

ctgctatctt gtatcactgt gccggtctcc ggcttgagg tcaagaacac cagcagctct 600

tacatggtaa ccaatgactg ccagaacagt agcatcgtct ggcagctcag ggatgctggt 660

cttcacgtcc ccgggtgtgt cccttgtag gagaggggca acatatcccg ctgttgata 720

ccggtttcgc ccaatatagc tgtgagccaa cctgggtgagc ttaccaaggg cctgcggacg 780

catattgata ccattcattgc atccgctacg ttttgctctg ccctgtacat aggagacctg 840

tgtggcgagg tgatgttggc ttctcaagtc ttcacatctt cggcccagca tcataagttt 900

gtccaggact gcaactgttc catataccca ggccacatca ctggacatcg gatggcg 957

<210> 144

<211> 319

<212> PRT

<213> hepatitis C virus

<400> 144

Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn  
1 5 10 15

Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly  
20 25 30

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala  
35 40 45

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro  
50 55 60

Ile Pro Lys Asp Arg Arg Pro Thr Gly Lys Ser Trp Gly Lys Pro Gly  
65 70 75 80

Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Leu Gly Trp Ala Gly Trp  
85 90 95

Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro  
100 105 110

Arg His Arg Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys  
115 120 125

Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Val Val Gly Ala Pro Val  
130 135 140

Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp  
145 150 155 160

Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe Ser Ile  
165 170 175

Phe Leu Leu Ala Leu Leu Ser Cys Ile Thr Val Pro Val Ser Gly Leu  
180 185 190

Gln Val Lys Asn Thr Ser Ser Ser Tyr Met Val Thr Asn Asp Cys Gln  
195 200 205

Asn Ser Ser Ile Val Trp Gln Leu Arg Asp Ala Val Leu His Val Pro  
210 215 220

Gly Cys Val Pro Cys Glu Glu Lys Gly Asn Ile Ser Arg Cys Trp Ile

225 230 235 240

Pro Val Ser Pro Asn Ile Ala Val Ser Gln Pro Gly Ala Leu Thr Lys  
245 250 255

Gly Leu Arg Thr His Ile Asp Thr Ile Ile Ala Ser Ala Thr Phe Cys  
260 265 270

Ser Ala Leu Tyr Ile Gly Asp Leu Cys Gly Ala Val Met Leu Ala Ser  
275 280 285

Gln Val Phe Ile Ile Ser Pro Gln His His Lys Phe Val Gln Asp Cys  
290 295 300

Asn Cys Ser Ile Tyr Pro Gly His Ile Thr Gly His Arg Met Ala  
305 310 315

<210> 145  
<211> 340  
<212> DNA  
<213> hepatitis C virus

<400> 145  
ctcaacggtc acggagaggg acatcagaac tgaggagtcc atataccttg cttgctcttt 60  
accgagcag gcacggactg ccatacactc actgactgag aggctttacg tgggagggcc 120  
catgctaaac agcaaagggc aaacctgcgg atacagacgc tgccgcgcca gcggagtgtt 180  
caccactagc atgggaaata ccatcacgtg ctacgtgaag gcacaagcag cctgtaaggc 240  
tgcgggcata attgccccca cgatgctggt gtgcggcgac gatctagttg tcatctcaga 300  
gagtcagggg accgaggagg acgagcggaa cctacgagcc 340

<210> 146  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 146

Ser Thr Val Thr Glu Arg Asp Ile Arg Thr Glu Glu Ser Ile Tyr Leu  
1 5 10 15

Ala Cys Ser Leu Pro Glu Gln Ala Arg Thr Ala Ile His Ser Leu Thr  
20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met Leu Asn Ser Lys Gly Gln Thr  
 35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Phe Thr Thr Ser Met  
 50 55 60

Gly Asn Thr Ile Thr Cys Tyr Val Lys Ala Gln Ala Ala Cys Lys Ala  
 65 70 75 80

Ala Gly Ile Ile Ala Pro Thr Met Leu Val Cys Gly Asp Asp Leu Val  
 85 90 95

Val Ile Ser Glu Ser Gln Gly Thr Glu Glu Asp Glu Arg Asn Leu Arg  
 100 105 110

Ala

<210> 147  
 <211> 345  
 <212> DNA  
 <213> hepatitis C virus

<400> 147  
 atgagcacac ttcctaaacc acaaagaaaa accaaaagaa acaccaaccc cggccacagg 60  
 acgttaagtt cccaggcggc ggtcagatcg ttggtggagt ttacgtgcta ccacgcaggg 120  
 gccccagtt ggggtgtgct gcagtgcgca agacttccga gcggtcgcaa cctcgcagta 180  
 ggcgccaacc catccccagg gcgcgccgaa ccgagggcag gtccctgggct cagcccggt 240  
 acccttgcc cctatatggg aatgagggt gcgggtgggc aggggtggctc ctgtccccgc 300  
 gcggctctcg cccgtcgtgg ggcccaaag acccccggcg cagga 345

<210> 148  
 <211> 115  
 <212> PRT  
 <213> hepatitis C virus

<400> 148

Met Ser Thr Leu Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn  
 1 5 10 15

Pro Gly His Arg Thr Leu Ser Ser Gln Ala Ala Val Arg Ser Leu Val  
 20 25 30

Glu Phe Thr Cys Tyr His Ala Gly Ala Pro Ser Trp Val Cys Val Gln  
 35 40 45

Cys Ala Arg Leu Pro Ser Gly Arg Asn Leu Ala Val Gly Ala Asn Pro  
 50 55 60

Ser Pro Gly Arg Ala Glu Pro Arg Ala Gly Pro Gly Leu Ser Pro Gly  
 65 70 75 80

Thr Leu Gly Pro Tyr Met Gly Met Arg Ala Ala Gly Gly Gln Gly Gly  
 85 90 95

Ser Cys Pro Arg Ala Ala Leu Ala Arg Arg Gly Ala Gln Met Thr Pro  
 100 105 110

Gly Ala Gly  
 115

<210> 149  
 <211> 280  
 <212> DNA  
 <213> hepatitis C virus

<400> 149  
 ggctgtgac ctcaaggacg aggctaggag ggtgataact tcactcacgg agcggcttta 60  
 ctgtggtggt cctatgttca acagcaaggg acaacactgc ggttaccgcc gctgccgtgc 120  
 tagtggggtg ctaccacca gcttcgggaa cacaatcacc tgttacatca aagcaaaggc 180  
 agctaccaa gctgccgga ttaaaaatcc atcattcctt gtctgcggag atgacttggt 240  
 cgtgattgct gagagtgcag ggatcgatga ggacagagcg 280

<210> 150  
 <211> 93  
 <212> PRT  
 <213> hepatitis C virus

<400> 150

Ala Cys Asp Leu Lys Asp Glu Ala Arg Arg Val Ile Thr Ser Leu Thr  
 1 5 10 15

Glu Arg Leu Tyr Cys Gly Gly Pro Met Phe Asn Ser Lys Gly Gln His  
 20 25 30

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr Ser Phe  
 35 40 45

Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Lys Ala Ala Thr Lys Ala  
 50 55 60

Ala Gly Ile Lys Asn Pro Ser Phe Leu Val Cys Gly Asp Asp Leu Val  
 65 70 75 80

Val Ile Ala Glu Ser Ala Gly Ile Asp Glu Asp Arg Ala  
 85 90

<210> 151  
 <211> 499  
 <212> DNA  
 <213> hepatitis C virus

<400> 151  
 atgagcacga atcctaaacc tcaaagaaaa accaaaagaa acaccaaccg tcgcccacag 60  
 gacgtcaagt tcccggggcgg tggtcagatc gttggcggag tttacttggt gccgcgcagg 120  
 ggccctagga tgggtgtgcg cgcgactcgg aagacttcgg aacggtcgca accccgtgga 180  
 cggcgtcagc ctattcccaa ggcgcgccag cccacggggc ggtcctgggg tcaaccggg 240  
 tacccttggc ccctttacgc caatgagggc ctcgggtggg caggggtggct gctctcccct 300  
 cgaggctctc ggcctaattg gggccccaat gacccccggc gaaaatcgcg taatttgggt 360  
 aaggtcatcg ataccctaac gtgcggatc gccgatctca tggggatatat cccgctcgta 420  
 ggcggcccca ttggggggcgt cgcaagggct ctcgcacacg gtgtgagggt ccttgaggac 480  
 ggggtaaact atgcaacag 499

<210> 152  
 <211> 166  
 <212> PRT  
 <213> hepatitis C virus

<400> 152

Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn  
 1 5 10 15

Arg Arg Pro Gln Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly  
 20 25 30

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Met Gly Val Arg Ala



35	40	45
Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro		
50	55	60
Ile Pro Lys Ala Arg Gln Pro Thr Gly Arg Ser Trp Gly Gln Pro Gly		
65	70	75 80
Tyr Pro Trp Pro Leu Tyr Ala Asn Glu Gly Leu Gly Trp Ala Gly Trp		
	85	90 95
Leu Leu Ser Pro Arg Gly Ser Arg Pro Asn Trp Gly Pro Asn Asp Pro		
	100	105 110
Arg Arg Lys Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys		
	115	120 125
Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Gly Pro Ile		
	130	135 140
Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp		
	145	150 155 160
Gly Val Asn Tyr Ala Thr		
	165	

<210> 153  
 <211> 579  
 <212> DNA  
 <213> hepatitis C virus

<400> 153	
acgtgcggat tcgccgatct catgggggtac atcccgctcg taggcggccc cgttgggggc	60
gtcgcaaggg ctctcgaca cgggtgtgagg gtccttgagg acggggtaaa ctatccaaca	120
gggaatttac ccggttgctc tttctctatc tttattcttg ctcttctctc gtgtctgacc	180
gttccggcct ctgcagttcc ctaccgaaat gcctctggga tttatcatgt taccaatgat	240
tgcccaaact cttccatagt ctatgaggca gataacctga tcctacacgc acctggttgc	300
gtgccttggtg tcatgacagg taatgtgagt agatgctggg tccaaattac ccctacactg	360
tcagccccga gcctcggagc agtcacggct cctcttcgga gagccgttga ctacctagcg	420
ggaggggctg ccctctgctc cgcgttatac gtaggagacg cgtgtggggc actattcttg	480

gtaggccaaa tggtcaccta taggcctcgc cagcacgcta cggcgcagaa ctgcaactgt 540

tccatttaca gtggccatgt taccggccac cggatggcg 579

<210> 154

<211> 193

<212> PRT

<213> hepatitis C virus

<400> 154

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Gly  
1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu  
20 25 30

Glu Asp Gly Val Asn Tyr Pro Thr Gly Asn Leu Pro Gly Cys Ser Phe  
35 40 45

Ser Ile Phe Ile Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser  
50 55 60

Ala Val Pro Tyr Arg Asn Ala Ser Gly Ile Tyr His Val Thr Asn Asp  
65 70 75 80

Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Asp Asn Leu Ile Leu His  
85 90 95

Ala Pro Gly Cys Val Pro Cys Val Met Thr Gly Asn Val Ser Arg Cys  
100 105 110

Trp Val Gln Ile Thr Pro Thr Leu Ser Ala Pro Ser Leu Gly Ala Val  
115 120 125

Thr Ala Pro Leu Arg Arg Ala Val Asp Tyr Leu Ala Gly Gly Ala Ala  
130 135 140

Leu Cys Ser Ala Leu Tyr Val Gly Asp Ala Cys Gly Ala Leu Phe Leu  
145 150 155 160

Val Gly Gln Met Phe Thr Tyr Arg Pro Arg Gln His Ala Thr Val Gln  
165 170 175

Asn Cys Asn Cys Ser Ile Tyr Ser Gly His Val Thr Gly His Arg Met

180

185

190

Ala

<210> 155  
 <211> 579  
 <212> DNA  
 <213> hepatitis C virus

<400> 155  
 acgtgcggat tcgccgacct cgtgggggtac atcccgcctcg taggcggccc cggtgggggc 60  
 gtcgcaaggg ctctcgaca tgggtgtgagg gttcttgagg acgggggtgaa ttatgcaaca 120  
 gggaatctgc ctgggtgctc tttctctatc ttcattcttg cacttctctc gtgcctcact 180  
 gtcccggcct ctgcagttcc ctaccgaaat gcctctggga tctatcatgt caccaatgat 240  
 tgcccaaact cttccatagt ctatgaggca gatgatctga tcctacacgc acctggctgc 300  
 gtgccttggtg tcaggaaaga taatgtgagt aggtgctggg tccaaattac cccacgctg 360  
 tcagccccga gcttcggagc agtcacggct ccccttcgga gagccgttga ttacttggtg 420  
 ggaggggctg ccctctgctc cgcgttatac gttggagacg cgtgtggggc actatTTTTg 480  
 gtaggccaaa tggtcaccta taggcctcgc cagcatgcta cggtgcagga ctgcaactgt 540  
 tccatctaca gtggccacgt caccggccat cagatggca 579

<210> 156  
 <211> 193  
 <212> PRT  
 <213> hepatitis C virus

<400> 156

Thr Cys Gly Phe Ala Asp Leu Val Gly Tyr Ile Pro Leu Val Gly Gly  
 1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu  
 20 25 30

Glu Asp Gly Val Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe  
 35 40 45

Ser Ile Phe Ile Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser  
 50 55 60

Ala Val Pro Tyr Arg Asn Ala Ser Gly Ile Tyr His Val Thr Asn Asp  
65 70 75 80

Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Asp Asp Leu Ile Leu His  
85 90 95

Ala Pro Gly Cys Val Pro Cys Val Arg Lys Asp Asn Val Ser Arg Cys  
100 105 110

Trp Val Gln Ile Thr Pro Thr Leu Ser Ala Pro Ser Phe Gly Ala Val  
115 120 125

Thr Ala Pro Leu Arg Arg Ala Val Asp Tyr Leu Val Gly Gly Ala Ala  
130 135 140

Leu Cys Ser Ala Leu Tyr Val Gly Asp Ala Cys Gly Ala Leu Phe Leu  
145 150 155 160

Val Gly Gln Met Phe Thr Tyr Arg Pro Arg Gln His Ala Thr Val Gln  
165 170 175

Asp Cys Asn Cys Ser Ile Tyr Ser Gly His Val Thr Gly His Gln Met  
180 185 190

Ala

<210> 157  
<211> 530  
<212> DNA  
<213> hepatitis C virus

<400> 157  
cacctacgac agctctgctg gtggcccagt tactgcggat tccccaagtg gtcattgaca 60  
tcacgcgagg gagccactgg ggggtcttgt ttgccgccgc atactatgca tcggtggcta 120  
actggaccaa ggtcgtgctg gtcttgtttc tgtttgcagg ggttgatgct actaccaga 180  
tttcgggcgg ctccagcgcc caaacgacgt atggcatcgc ctcatattac acccgcggcg 240  
cgcagcagaa actgcagctc ataaatacca acggaagctg gcacatcaac aggaccgccc 300  
ttaattgtaa tgacagcctc cagactgggt tcatagccgg cctcttctac taccataagt 360  
tcaactcttc tggatgcccc gatcggtagg ctagctgtag ggcccttgcc acttttgacc 420  
agggctgggg aactatcagc tatgccaaca tatcgggtcc cagtgatgac aaaccatatt 480

gctggcacta tccccacgg ccgtgctggag tgggtgccagc ccaagaggtc

530

<210> 158  
<211> 176  
<212> PRT  
<213> hepatitis C virus

<400> 158

Pro Thr Thr Ala Leu Leu Val Ala Gln Leu Leu Arg Ile Pro Gln Val  
1 5 10 15

Val Ile Asp Ile Ile Ala Gly Ser His Trp Gly Val Leu Phe Ala Ala  
20 25 30

Ala Tyr Tyr Ala Ser Val Ala Asn Trp Thr Lys Val Val Leu Val Leu  
35 40 45

Phe Leu Phe Ala Gly Val Asp Ala Thr Thr Gln Ile Ser Gly Gly Ser  
50 55 60

Ser Ala Gln Thr Thr Tyr Gly Ile Ala Ser Phe Ile Thr Arg Gly Ala  
65 70 75 80

Gln Gln Lys Leu Gln Leu Ile Asn Thr Asn Gly Ser Trp His Ile Asn  
85 90 95

Arg Thr Ala Leu Asn Cys Asn Asp Ser Leu Gln Thr Gly Phe Ile Ala  
100 105 110

Gly Leu Phe Tyr Tyr His Lys Phe Asn Ser Ser Gly Cys Pro Asp Arg  
115 120 125

Met Ala Ser Cys Arg Ala Leu Ala Thr Phe Asp Gln Gly Trp Gly Thr  
130 135 140

Ile Ser Tyr Ala Asn Ile Ser Gly Pro Ser Asp Asp Lys Pro Tyr Cys  
145 150 155 160

Trp His Tyr Pro Pro Arg Pro Cys Gly Val Val Pro Ala Gln Glu Val  
165 170 175

<210> 159  
<211> 340

<212> DNA  
<213> hepatitis C virus

<400> 159  
ctcgaccgtt accgaacatg acataatgac cgaagagtcc atttaccaat catgtgactt 60  
gcagcccgag gcacgcgcag caatacggtc actcacccaa cgcctctact gtggaggccc 120  
catgtacaac agcaaggggc aacagtgtgg ttatcgaga tgccgcgcca gcggcgtttt 180  
caccaccagt atgggcaaca ccatgacgtg ctacatcaag gctttagcct cctgtagagc 240  
cgcaaggctc cgggactgca cgctcctggt gtgtggtgac gatcttgtgg ccatctgcga 300  
gagccagggg acacacgagg atgaagcaag cctgagagcc 340

<210> 160  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 160

Ser Thr Val Thr Glu His Asp Ile Met Thr Glu Glu Ser Ile Tyr Gln  
1 5 10 15

Ser Cys Asp Leu Gln Pro Glu Ala Arg Ala Ala Ile Arg Ser Leu Thr  
20 25 30

Gln Arg Leu Tyr Cys Gly Gly Pro Met Tyr Asn Ser Lys Gly Gln Gln  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Phe Thr Thr Ser Met  
50 55 60

Gly Asn Thr Met Thr Cys Tyr Ile Lys Ala Leu Ala Ser Cys Arg Ala  
65 70 75 80

Ala Arg Leu Arg Asp Cys Thr Leu Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Ala Ile Cys Glu Ser Gln Gly Thr His Glu Asp Glu Ala Ser Leu Arg  
100 105 110

Ala

<210> 161

<211> 340  
<212> DNA  
<213> hepatitis C virus

<400> 161  
ctcaaccgcc accgaacatg acatattgac tgaagagtcc atataccaat catgtgactc 60  
gcagcccgac gcacgcgcag caatacggtc actcacccaa cgcttggtct gtggaggccc 120  
catgtataac agcaaggggc aacaatgtgg ttatcgaga tgccgcgcca gcggcgtctt 180  
caccaccagt atgggcaaca ccatgacgtg ctacattaag gctttagcct cctgtagaac 240  
cgctgggctc cgggactaca cgctcctggt gtgtggtgac gatcatgtgg ccatctgcga 300  
gagccagggg acacacgagg atgaagcgaa cctgagagcc 340

<210> 162  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 162

Ser Thr Ala Thr Glu His Asp Ile Leu Thr Glu Glu Ser Ile Tyr Gln  
1 5 10 15

Ser Cys Asp Ser Gln Pro Asp Ala Arg Ala Ala Ile Arg Ser Leu Thr  
20 25 30

Gln Arg Leu Phe Cys Gly Gly Pro Met Tyr Asn Ser Lys Gly Gln Gln  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Phe Thr Thr Ser Met  
50 55 60

Gly Asn Thr Met Thr Cys Tyr Ile Lys Ala Leu Ala Ser Cys Arg Thr  
65 70 75 80

Ala Gly Leu Arg Asp Tyr Thr Leu Leu Val Cys Gly Asp Asp His Val  
85 90 95

Ala Ile Cys Glu Ser Gln Gly Thr His Glu Asp Glu Ala Asn Leu Arg  
100 105 110

Ala

<210> 163  
 <211> 499  
 <212> DNA  
 <213> hepatitis C virus

<400> 163  
 atgagcacga atcctaaact tcaaagaaaa accaaacgta acaccaaccg ccgccccatg 60  
 gacgttaagt tcccgggtgg tggccagatc gttggcggag ttacttggt gccgcgcagg 120  
 ggccttaggt tgggtgtgcg cgcgactcgg aagacttcgg agcggtcgca acctcgtggg 180  
 aggcgccaac ctatcccca ggcgcgccga tccgagggca gatcctgggc gcagcccggg 240  
 tatccttggc ccctttacgg caatgagggc tgtgggtggg caggggtggct cctgtcccct 300  
 cgcggggtctc ggccgtcttg gggccctaata gatccccggc ggaggtcccg caacctgggt 360  
 aaggtcatcg ataccctaac atgcggcttc gccgacctca tgggatacat cccgcttgta 420  
 ggcgcccccg tgggtggcgt cgccagagcc ctggcacacg gtgttagggc tgtggaagac 480  
 gggatcaact acgcaacag 499

<210> 164  
 <211> 166  
 <212> PRT  
 <213> hepatitis C virus

<400> 164

Met Ser Thr Asn Pro Lys Leu Gln Arg Lys Thr Lys Arg Asn Thr Asn  
 1 5 10 15

Arg Arg Pro Met Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly  
 20 25 30

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala  
 35 40 45

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro  
 50 55 60

Ile Pro Lys Ala Arg Arg Ser Glu Gly Arg Ser Trp Ala Gln Pro Gly  
 65 70 75 80

Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp  
 85 90 95

Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp Gly Pro Asn Asp Pro



100	105	110
Arg Arg Arg Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys		
115	120	125
Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala Pro Val		
130	135	140
Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val Glu Asp		
145	150	155
		160
Gly Ile Asn Tyr Ala Thr		
	165	

<210> 165  
 <211> 499  
 <212> DNA  
 <213> hepatitis C virus

<220>  
 <221> misc\_feature  
 <222> (306)..(306)  
 <223> "n" is any nucleotide

<220>  
 <221> misc\_feature  
 <222> (313)..(313)  
 <223> "n" is any nucleotide

<220>  
 <221> misc\_feature  
 <222> (340)..(340)  
 <223> "n" is any nucleotide

<400> 165	
atgagcacga atcctaaacc tcaaagaaaa accaaacgta acaccaaccg ccgccttatg	60
gacgttaagt tcccaggcgg tggtcagatc gttggcggag tttacttggt gccgcgcagg	120
ggccccaggt tgggtgtgcg cgcgactcgg aagacttcgg agcggtcgca acctcgtggg	180
aggcgccaac ctatcccaa ggcgcgccga accgagggca gatcctgggc gcagcccggg	240
tatccttggc ccctttacgg caatgagggc tgtgggtggg caggggtggct cctgtcccct	300
cgcggnctctc ggnctgtctt gggccccaat gatccccggn ggagatcccg caacttgggt	360
aaggtcatcg ataccctaac atgcggcttc gccgacctca tgggatacat cccgcttgta	420

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ggcgcccccg tgggtggcgt cgccagggcc ctggcacatg gtgttagggc tgtggaagac      480
gggatcaatt atgcaacag                                                    499

```

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<210> 166
<211> 126
<212> PRT
<213> hepatitis C virus

```

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<220>
<221> MISC_FEATURE
<222> (102)..(102)
<223> "Xaa" is any amino acid

```

```

<220>
<221> MISC_FEATURE
<222> (105)..(105)
<223> "Xaa" is any amino acid

```

```

<220>
<221> MISC_FEATURE
<222> (114)..(114)
<223> "Xaa" is any amino acid

```

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<400> 166

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```

Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn
1          5          10          15

```

```

Arg Arg Pro Met Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly
20          25          30

```

```

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala
35          40          45

```

```

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro
50          55          60

```

```

Ile Pro Lys Ala Arg Arg Thr Glu Gly Arg Ser Trp Ala Gln Pro Gly
65          70          75          80

```

```

Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp
85          90          95

```

```

Leu Leu Ser Pro Arg Xaa Ser Arg Xaa Ser Trp Gly Pro Asn Asp Pro
100          105          110

```

Arg Xaa Arg Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu  
 115 120 125

<210> 167  
 <211> 579  
 <212> DNA  
 <213> hepatitis C virus

<400> 167  
 acatgcggct tcgccgacct catgggatac atcccgcttg taggcgcccc cgtgggtggc 60  
 gtcgccaggg ccctggcaca tgggtgtagg gctgtggaag acgggatcaa ttatgcaaca 120  
 gggaaccttc cgggttgctc cttttctatc ttctcttg cgctcctctc gtgcctgact 180  
 gttcccatat cggccgttaa ctatcgcaat gtttcgggca tttatcacat caccaatgac 240  
 tgcccgaatg caagcatagt gtacgagacc gaaaatcaca tcttacacct ccagggtgac 300  
 gtaccctgtg tgaggactgg gaaccagtcg cgggtgttggg tggccctcac tcccacagta 360  
 gcgtcgccat acgccgggtgc tccgcttgag cccttgccgc gtcattgtga cctgatggta 420  
 ggtgctgcca ccatgtgttc cgccctctac atcggcgact tgtgcgggtg cttattcttg 480  
 gtgggccaaa tggtcacctt ccaaccgaga cgtcactgga ccactcagga ctgcaattgt 540  
 tccatctaca cgggccacat tacgggtcat cggatggca 579

<210> 168  
 <211> 193  
 <212> PRT  
 <213> hepatitis C virus

<400> 168

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala  
 1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val  
 20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe  
 35 40 45

Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Thr Ser  
 50 55 60

Ala Val Asn Tyr Arg Asn Ala Ser Gly Ile Tyr His Ile Thr Asn Asp  
 65 70 75 80

Cys Pro Asn Ala Ser Ile Val Tyr Glu Thr Glu Asn His Ile Leu His  
85 90 95

Leu Pro Gly Cys Val Pro Cys Val Arg Thr Gly Asn Gln Ser Arg Cys  
100 105 110

Trp Val Ala Leu Thr Pro Thr Val Ala Ser Pro Tyr Ala Gly Ala Pro  
115 120 125

Leu Glu Pro Leu Arg Arg His Val Asp Leu Met Val Gly Ala Ala Thr  
130 135 140

Met Cys Ser Ala Leu Tyr Ile Gly Asp Leu Cys Gly Gly Leu Phe Leu  
145 150 155 160

Val Gly Gln Met Phe Thr Phe Gln Pro Arg Arg His Trp Thr Thr Gln  
165 170 175

Asp Cys Asn Cys Ser Ile Tyr Thr Gly His Ile Thr Gly His Arg Met  
180 185 190

Ala

<210> 169  
<211> 579  
<212> DNA  
<213> hepatitis C virus

<400> 169  
acatgcggct tcgccgacct catgggatac atcccgcttg taggcgcccc cgtgggtggc 60  
gtcgccagag ccctggcaca cgggtgtagg gctgtggaag acgggatcaa ctacgcaaca 120  
gggaatctcc ccggttgctc cttttctatc ttctcttg cacttctctc gtgcctcact 180  
gttcccgct cgggcgtaa ctatcgcaat gttcgggcg tttatcacat caccaacgac 240  
tgcccgaatg cgagcatagt gtacgagacc gacaatcaca tcttacacct ccagggtgc 300  
gtaccctgtg tgaagaccgg gaaccagtcg cgggtgtggg tggccctcac tcccacagtg 360  
gcgtgcctt acgtcgggtg tccgctcgag cccttgccgc gccatgtgga cctgatggta 420  
gggtgtgcca ccgtgtgctc cgccctctac gtcggcgacc tgtgcggtgg cttattcttg 480  
gtaggccaaa tgttcacctt ccaaccgcga cgccactgga cgaccagga ctgtaattgt 540

tccatctacg cagggcatat tacgggcat cggatggct

579

<210> 170  
<211> 193  
<212> PRT  
<213> hepatitis C virus

<400> 170

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala  
1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val  
20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe  
35 40 45

Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser  
50 55 60

Gly Val Asn Tyr Arg Asn Ala Ser Gly Val Tyr His Ile Thr Asn Asp  
65 70 75 80

Cys Pro Asn Ala Ser Ile Val Tyr Glu Thr Asp Asn His Ile Leu His  
85 90 95

Leu Pro Gly Cys Val Pro Cys Val Lys Thr Gly Asn Gln Ser Arg Cys  
100 105 110

Trp Val Ala Leu Thr Pro Thr Val Ala Ser Pro Tyr Val Gly Ala Pro  
115 120 125

Leu Glu Pro Leu Arg Arg His Val Asp Leu Met Val Gly Ala Ala Thr  
130 135 140

Val Cys Ser Ala Leu Tyr Val Gly Asp Leu Cys Gly Gly Leu Phe Leu  
145 150 155 160

Val Gly Gln Met Phe Thr Phe Gln Pro Arg Arg His Trp Thr Thr Gln  
165 170 175

Asp Cys Asn Cys Ser Ile Tyr Ala Gly His Ile Thr Gly His Arg Met  
180 185 190

Ala

<210> 171  
<211> 579  
<212> DNA  
<213> hepatitis C virus

<400> 171  
acatgctggct tcgccgacct catgggatac atcccgcttg tgggcgcccc tgttggtggc 60  
gtcgccagag cccttgcgca cggcgtcagg gctgtggaag acgggattaa ctatgcaaca 120  
gggaaccttc ctggttgctc cttttctatc ttccttctgg cacttctctc gtgcctgact 180  
gtccccgcct cggctgtgca ttatcacaac acctcgggca tctaccacct caccaatgac 240  
tgccctaact ctagcatagt ctttgaggca gtccatcaca tcttgcacct tccaggatgc 300  
gtcccttggt taagaactgg gaaccagtct cgggtgctggg tagccttgac cccacgctg 360  
gccgcgccat accttggcgc tccactcgag tccatgcggc gtcacgtgga tttgatgggtg 420  
ggcactgcta cattgtgctc agcactctac gttggggacc tgtgcggggg catattccta 480  
gcgggccaga tggtcacctt ccggccccgc ctccattgga ccaccagga gtgcaattgt 540  
tccacctatc cgggccacat cacgggtcat agaatggcg 579

<210> 172  
<211> 193  
<212> PRT  
<213> hepatitis C virus

<400> 172

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala  
1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val  
20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe  
35 40 45

Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser  
50 55 60

Ala Val His Tyr His Asn Thr Ser Gly Ile Tyr His Leu Thr Asn Asp

65

70

75

80

Cys Pro Asn Ser Ser Ile Val Phe Glu Ala Val His His Ile Leu His  
85 90 95

Leu Pro Gly Cys Val Pro Cys Val Arg Thr Gly Asn Gln Ser Arg Cys  
100 105 110

Trp Val Ala Leu Thr Pro Thr Leu Ala Ala Pro Tyr Leu Gly Ala Pro  
115 120 125

Leu Glu Ser Met Arg Arg His Val Asp Leu Met Val Gly Thr Ala Thr  
130 135 140

Leu Cys Ser Ala Leu Tyr Val Gly Asp Leu Cys Gly Gly Ile Phe Leu  
145 150 155 160

Ala Gly Gln Met Phe Thr Phe Arg Pro Arg Leu His Trp Thr Thr Gln  
165 170 175

Glu Cys Asn Cys Ser Thr Tyr Pro Gly His Ile Thr Gly His Arg Met  
180 185 190

Ala

&lt;210&gt; 173

&lt;211&gt; 579

&lt;212&gt; DNA

&lt;213&gt; hepatitis C virus

&lt;400&gt; 173

acgtgcggtt cgcgcgacct catgggatac atcccgctcg taggcgcgcc tgtgggtggc 60

gtcgccaggg ccttggcgca tggcgtcagg gctgtggagg acgggataaa ctatgcaaca 120

gggaaccttc ctggttgctc tttttctatc ttcttcttgg cacttctctc gtgcctgact 180

gtccccgcct cagctgtgca ttatcacaac acctcgggca tctatcacat cactaatgac 240

tgccctaact ctagcatagt ctttgaggca gagcatcaca tcttgcatct tccaggatgc 300

gtcccctgtg tgagaactgg gaaccagtca cgatgctgga tagccttgac ccctacgttg 360

gccgcgccac acattggcgc tccacttgag tccatgcgac gtcagtgtgga tttgatggta 420

ggcactgcca cattgtgctc cgcactctac attggagatc tgtgcgagg catatttcta 480

gtgggccaga tgttcaactt caggccccgc ctgcactgga ccaccagga gtgcaattgt 540  
tccatctatc caggccacat cacgggtcac agaatggcg 579

<210> 174  
<211> 193  
<212> PRT  
<213> hepatitis C virus

<400> 174

Thr Cys Gly Ser Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala  
1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val  
20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe  
35 40 45

Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser  
50 55 60

Ala Val His Tyr His Asn Thr Ser Gly Ile Tyr His Ile Thr Asn Asp  
65 70 75 80

Cys Pro Asn Ser Ser Ile Val Phe Glu Ala Glu His His Ile Leu His  
85 90 95

Leu Pro Gly Cys Val Pro Cys Val Arg Thr Gly Asn Gln Ser Arg Cys  
100 105 110

Trp Ile Ala Leu Thr Pro Thr Leu Ala Ala Pro His Ile Gly Ala Pro  
115 120 125

Leu Glu Ser Met Arg Arg His Val Asp Leu Met Val Gly Thr Ala Thr  
130 135 140

Leu Cys Ser Ala Leu Tyr Ile Gly Asp Leu Cys Gly Gly Ile Phe Leu  
145 150 155 160

Val Gly Gln Met Phe Asn Phe Arg Pro Arg Leu His Trp Thr Thr Gln  
165 170 175

Glu Cys Asn Cys Ser Ile Tyr Pro Gly His Ile Thr Gly His Arg Met



180

185

190

Ala

<210> 175  
 <211> 579  
 <212> DNA  
 <213> hepatitis C virus

<400> 175  
 acgtgcggct ttgccgacct catgggatac atcccgtcgc tgggcgcccc tgtgggtggc 60  
 gtcgccaggg ccttggcaca tgggtgtcagg gccgtggagg acgggattaa ctatgcaaca 120  
 gggaatcttc ccggttgctc cttttctatc ttccttctag cacttctctc gtgcttgact 180  
 gtcccggcct cggcgcagca ctaccggaac atctcgggca tttatcacgt caccaatgac 240  
 tgcccgaact ctagtatagt gtatgaagct gaccatcata tcatgcatct accaggggtgt 300  
 gtgccttgcg tgagaaccgg gaacacctcg cgctgctggg ttcctttaac acccactgtg 360  
 gctgccccct atgttggcgc gccgctcgaa tccatgcggc ggcacgtgga cttaatgggtg 420  
 ggtgccgcca ccgtctgctc ggccctgtac atcggagacc tttgcggagg tgtcttctcg 480  
 gtcgggcaga tgttcacctt ccggccgcgc cgccattgga ctaccagga ctgcaactgc 540  
 tctatctatg atggccacat caccggccat agaatggct 579

<210> 176  
 <211> 193  
 <212> PRT  
 <213> hepatitis C virus

<400> 176

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala  
 1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val  
 20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe  
 35 40 45

Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser  
 50 55 60

Ala Gln His Tyr Arg Asn Ile Ser Gly Ile Tyr His Val Thr Asn Asp  
65 70 75 80

Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Asp His His Ile Met His  
85 90 95

Leu Pro Gly Cys Val Pro Cys Val Arg Thr Gly Asn Thr Ser Arg Cys  
100 105 110

Trp Val Pro Leu Thr Pro Thr Val Ala Ala Pro Tyr Val Gly Ala Pro  
115 120 125

Leu Glu Ser Met Arg Arg His Val Asp Leu Met Val Gly Ala Ala Thr  
130 135 140

Val Cys Ser Ala Leu Tyr Ile Gly Asp Leu Cys Gly Gly Val Phe Leu  
145 150 155 160

Val Gly Gln Met Phe Thr Phe Arg Pro Arg Arg His Trp Thr Thr Gln  
165 170 175

Asp Cys Asn Cys Ser Ile Tyr Asp Gly His Ile Thr Gly His Arg Met  
180 185 190

Ala

<210> 177  
<211> 579  
<212> DNA  
<213> hepatitis C virus

<400> 177  
acgtgcgggt tcgccgacct catgggatac atcccgctcg tgggcgctcc agtaggaggc 60  
gtcgccagag ccttggcgca tggcgtcagg gctgtggagg acgggatcaa ttacgcaaca 120  
gggaaccttc ccggctgctc cttttctatc ttctcttgg tacttctctc ggccttaact 180  
gtcccagcgt ctgctcagca ctaccggaat gcatcgggca tctaccatgt caccaacgac 240  
tgcccgaact ccagtattgt gtatgaagcc gaccatcaca tcatgcacct acccgggtgt 300  
gtgccctgtg taagaactgg gaatgtctcg cgttgctgga ttctttaac acccactgta 360  
gccgtccctt acctcggggc tccacttacg tctgtacggc agcatgtgga cctgatggtg 420  
ggggcggccca ccttatgctc tgccctctac atcgagagacc attgcggagg tgtcttcttg 480

gcagggcaga tggtcagttt ccaaccccg cgtcattgga ctaccagga ttgcaactgt 540

tccatctatg tgggccacat caccggccac aggatggcc 579

<210> 178

<211> 193

<212> PRT

<213> hepatitis C virus

<400> 178

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala  
1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val  
20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe  
35 40 45

Ser Ile Phe Leu Leu Val Leu Leu Ser Arg Leu Thr Val Pro Ala Ser  
50 55 60

Ala Gln His Tyr Arg Asn Ala Ser Gly Ile Tyr His Val Thr Asn Asp  
65 70 75 80

Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Asp His His Ile Met His  
85 90 95

Leu Pro Gly Cys Val Pro Cys Val Arg Thr Gly Asn Val Ser Arg Cys  
100 105 110

Trp Ile Pro Leu Thr Pro Thr Val Ala Val Pro Tyr Leu Gly Ala Pro  
115 120 125

Leu Thr Ser Val Arg Gln His Val Asp Leu Met Val Gly Ala Ala Thr  
130 135 140

Leu Cys Ser Ala Leu Tyr Ile Gly Asp His Cys Gly Gly Val Phe Leu  
145 150 155 160

Ala Gly Gln Met Val Ser Phe Gln Pro Arg Arg His Trp Thr Thr Gln  
165 170 175

Asp Cys Asn Cys Ser Ile Tyr Val Gly His Ile Thr Gly His Arg Met  
180 185 190

Ala

<210> 179  
<211> 579  
<212> DNA  
<213> hepatitis C virus

<220>  
<221> misc\_feature  
<222> (568)..(579)  
<223> "n" is any nucleotide

<400> 179  
acctgcggtc tcgccgacct catgggatac atcccgctcg taggcgcccc cgtgggagggc 60  
gtcgccagar ctctggcgca tggcgtcagg gctctggaag acgggatcaa ttatgcaaca 120  
gggaatcttc ctggttgctc tttctctatc tcccttcttg aacttctctc gtgcctgact 180  
gttcccgctt cagccatcca ctatcgcaat gcttcggacg gttattatat caccaatgat 240  
tgcccgaact ctagcatagt gtatgaagcc gagaaccaca tcttgcacct tccgggggtgt 300  
ataccctgtg tgaagaccgg gaatcagtcg cgggtgctggg tggctctcac cccacgctg 360  
gcggccccac acctacgtgc tccgctttcg tccttacggg cgcattgtgga cctaattggtg 420  
ggggccgcca cggcatgctc cgctttttac attggagatc tgtgcggggg tgtgtttttg 480  
gcggggccaac tgttcactat ccggccacgc attcatgaaa ccactcagga ctgcaattgc 540  
tccatctact cagggcacat cacgggtnnn nnnnnnnnn 579

<210> 180  
<211> 193  
<212> PRT  
<213> hepatitis C virus

<220>  
<221> MISC\_FEATURE  
<222> (24)..(24)  
<223> "Xaa" is any amino acid

<220>  
<221> MISC\_FEATURE  
<222> (190)..(193)  
<223> "Xaa" is any amino acid

<400> 180

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala  
1 5 10 15

Pro Val Gly Gly Val Ala Arg Xaa Leu Ala His Gly Val Arg Ala Leu  
20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe  
35 40 45

Ser Ile Ser Leu Leu Glu Leu Leu Ser Cys Leu Thr Val Pro Ala Ser  
50 55 60

Ala Ile His Tyr Arg Asn Ala Ser Asp Gly Tyr Tyr Ile Thr Asn Asp  
65 70 75 80

Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Glu Asn His Ile Leu His  
85 90 95

Leu Pro Gly Cys Ile Pro Cys Val Lys Thr Gly Asn Gln Ser Arg Cys  
100 105 110

Trp Val Ala Leu Thr Pro Thr Leu Ala Ala Pro His Leu Arg Ala Pro  
115 120 125

Leu Ser Ser Leu Arg Ala His Val Asp Leu Met Val Gly Ala Ala Thr  
130 135 140

Ala Cys Ser Ala Phe Tyr Ile Gly Asp Leu Cys Gly Gly Val Phe Leu  
145 150 155 160

Ala Gly Gln Leu Phe Thr Ile Arg Pro Arg Ile His Glu Thr Thr Gln  
165 170 175

Asp Cys Asn Cys Ser Ile Tyr Ser Gly His Ile Thr Gly Xaa Xaa Xaa  
180 185 190

Xaa

<210> 181

<211> 579

<212> DNA  
<213> hepatitis C virus

<220>  
<221> misc\_feature  
<222> (152)..(152)  
<223> "n" is any nucleotide

<400> 181  
gcgtgcggct tcgccgatct catgggatac atcccgctcg taggcgcccc cgtgggtggc 60  
gtcgccagag ccctggcgca cgggtgtagg gctgtggagg acgggattaa ctacgcaaca 120  
gggaatcttc ctggttgctc tttctctatc tnccttctgg cacttctctc gtgcctgact 180  
gtcccggcct cggctcagca ctaccggaat gtctcgggca tctaccacgt caccaatgat 240  
tgcccgaatt ccagcatagt gtatgaagcc gatcaccaca tcatgcactt accaggggtgc 300  
ataccctgcg tgaggaccgg gaacgtttcg cgctgctggg tatctctgac acctactgtg 360  
gctgctccct acctcggggc tccgcttacg tcgctacggc ggcattgtgga tttgatggtg 420  
gggtgcagcca ccctttgctc tgccctctac gtcggagacc tctgtggagg tgtcttccta 480  
gtgggacaga tgttcacctt ccagccgcgc cgccactgga ccactcagga ctgcaactgc 540  
tccatttacg tcggccacat cacaggccac agaattggct 579

<210> 182  
<211> 193  
<212> PRT  
<213> hepatitis C virus

<220>  
<221> MISC\_FEATURE  
<222> (51)..(51)  
<223> "Xaa" is any amino acid

<400> 182

Ala Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala  
1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val  
20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe  
35 40 45

Ser Ile Xaa Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser

50	55	60
Ala Gln His Tyr Arg Asn Val Ser Gly Ile Tyr His Val Thr Asn Asp		
65	70	75 80
Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Asp His His Ile Met His		
	85	90 95
Leu Pro Gly Cys Ile Pro Cys Val Arg Thr Gly Asn Val Ser Arg Cys		
	100	105 110
Trp Val Ser Leu Thr Pro Thr Val Ala Ala Pro Tyr Leu Gly Ala Pro		
	115	120 125
Leu Thr Ser Leu Arg Arg His Val Asp Leu Met Val Gly Ala Ala Thr		
	130	135 140
Leu Cys Ser Ala Leu Tyr Val Gly Asp Leu Cys Gly Gly Val Phe Leu		
145	150	155 160
Val Gly Gln Met Phe Thr Phe Gln Pro Arg Arg His Trp Thr Thr Gln		
	165	170 175
Asp Cys Asn Cys Ser Ile Tyr Val Gly His Ile Thr Gly His Arg Met		
	180	185 190

Ala

<210> 183  
 <211> 579  
 <212> DNA  
 <213> hepatitis C virus

<400> 183	
acctgcggtt ttgccgacct catgggatac atcccgctcg taggcgcccc tgtgggtggc	60
gtcgccaggg ccctagaaca cgggtgtagg gctgtggagg acggtattaa ttatgcaaca	120
gggaatctcc ccggttgctc tttttctatc tccctcttgg cacttctttc gtgcctgact	180
gttcccacct cagccgtcaa ctatcgcaac gcctcgggcg tctatcatat caccaatgac	240
tgcccgaatt cgagcatagt gtacgaggct gactaccaca tcctacacct ccctgggtgc	300
ttaccctgcy tgagggttgg gaatcagtca cgctgctggg tggcccttac tcccaccgtg	360

gcgggcgctt acgttggtgc tccgctagaa tccctccgga gtcatgtgga tctgatggta 420  
 ggtgctgcta ctgtgtgctc cgctctttac atcggggacc tgtgcggtgg cgtatttttg 480  
 gttggtcaga tgttttcttt ccagccgcga cgccactgga ccacgcagga ctgcaattgt 540  
 tctatctacg cggggcacgt tacgggccac aggatggca 579

<210> 184  
 <211> 193  
 <212> PRT  
 <213> hepatitis C virus

<400> 184

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala  
 1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val  
 20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe  
 35 40 45

Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Thr Ser  
 50 55 60

Ala Val Asn Tyr Arg Asn Ala Ser Gly Ile Tyr His Ile Thr Asn Asp  
 65 70 75 80

Cys Pro Asn Ala Ser Ile Val Tyr Glu Thr Glu Asn His Ile Leu His  
 85 90 95

Leu Pro Gly Cys Val Pro Cys Val Arg Thr Gly Asn Gln Ser Arg Cys  
 100 105 110

Trp Val Ala Leu Thr Pro Thr Val Ala Ser Pro Tyr Ala Gly Ala Pro  
 115 120 125

Leu Glu Pro Leu Arg Arg His Val Asp Leu Met Val Gly Ala Ala Thr  
 130 135 140

Met Cys Ser Ala Leu Tyr Ile Gly Asp Leu Cys Gly Gly Leu Phe Leu  
 145 150 155 160

Val Gly Gln Met Phe Thr Phe Gln Pro Arg Arg His Trp Thr Thr Gln



165

170

175

Asp Cys Asn Cys Ser Ile Tyr Thr Gly His Ile Thr Gly His Arg Met  
 180 185 190

Ala

<210> 185  
 <211> 579  
 <212> DNA  
 <213> hepatitis C virus

<400> 185  
 acttgccggt ttgccgacct catgggatac atcccgctcg taggcgcccc cgtgggtggc 60  
 gtcgccagag ccctggaaca tgggtgttagg gctgtggagg acggcatcaa ttatgcaaca 120  
 gggaatctcc ccggttgctc tttctctatc tacctcttgg cacttctctc gtgcctgact 180  
 gttcccacct cggccatcca ctatcgcaat gcctcgggcg tctaccacgt caccaatgac 240  
 tgcccgaact cgagcatagt gtacgaggcc gaccaccaca tcctacacct tccaggggtgc 300  
 ttaccctgtg tgaggggttg gaatcagtca cgttgttggg tggccctctc tcccaccgtg 360  
 gcggcgcctt acatcggtgc tccagttgaa tccttcgga gacacgtgga catgatggtg 420  
 ggcgctgcta ctgtgtgctc cgctctctat attggggact tgtgtggtgg cgtattcttg 480  
 gttggtcaga tgttttcttt ccggccacga cgccactgga ctacgcagga ctgcaattgt 540  
 tccatctacg cggggcacat cactggccac ggaatggca 579

<210> 186  
 <211> 193  
 <212> PRT  
 <213> hepatitis C virus

&lt;400&gt; 186

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala  
 1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Glu His Gly Val Arg Ala Val  
 20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe  
 35 40 45

Ser Ile Tyr Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Thr Ser  
50 55 60

Ala Ile His Tyr Arg Asn Ala Ser Gly Val Tyr His Val Thr Asn Asp  
65 70 75 80

Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Asp His His Ile Leu His  
85 90 95

Leu Pro Gly Cys Leu Pro Cys Val Arg Val Gly Asn Gln Ser Arg Cys  
100 105 110

Trp Val Ala Leu Ser Pro Thr Val Ala Ala Pro Tyr Ile Gly Ala Pro  
115 120 125

Val Glu Ser Phe Arg Arg His Val Asp Met Met Val Gly Ala Ala Thr  
130 135 140

Val Cys Ser Ala Leu Tyr Ile Gly Asp Leu Cys Gly Gly Val Phe Leu  
145 150 155 160

Val Gly Gln Met Phe Ser Phe Arg Pro Arg Arg His Trp Thr Thr Gln  
165 170 175

Asp Cys Asn Cys Ser Ile Tyr Ala Gly His Ile Thr Gly His Gly Met  
180 185 190

Ala

<210> 187  
<211> 579  
<212> DNA  
<213> hepatitis C virus

<400> 187  
acttgcggt ttgccgacct catgggatac atcccgctcg taggcgcccc tgtgggtggc 60  
gtcgccaggg ccctggcaca cggtgttagg gctgtggagg acgggatcaa ttatgcgaca 120  
gggaatcttc cgggttgctc tttctctatc ttcctcttgg cacttctttc gtgcctgact 180  
gttcccacct cggccgtcaa ctatcgcaat gcctcgggca tctatcacat caccaatgac 240  
tgcccgaact cgagcatagt gtacgagacc gagcaccaca tcctacacct cccaggggtgt 300  
ttaccctgcg tgagggttgg gaatcagtca cgctgctggg tggccctcac tcccaccgtg 360

gcggcgcctt acatcggcgc tccgcttgaa tccctccgga gtcatgtgga tctgatggta 420  
 ggtgccgcta ctgctgtctc cgctctttac atcggagacc tgtgcggtgg cgtatttttg 480  
 gttggtcaga tgttctcttt ccagccgcgg cgccactgga ctacgcagga ctgcaattgt 540  
 tccatctacg cggggcacgt tacgggccac aggatggca 579

<210> 188  
 <211> 193  
 <212> PRT  
 <213> hepatitis C virus

<400> 188

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala  
 1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val  
 20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe  
 35 40 45

Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Thr Ser  
 50 55 60

Ala Val Asn Tyr Arg Asn Ala Ser Gly Ile Tyr His Ile Thr Asn Asp  
 65 70 75 80

Cys Pro Asn Ser Ser Ile Val Tyr Glu Thr Glu His His Ile Leu His  
 85 90 95

Leu Pro Gly Cys Leu Pro Cys Val Arg Val Gly Asn Gln Ser Arg Cys  
 100 105 110

Trp Val Ala Leu Thr Pro Thr Val Ala Ala Pro Tyr Ile Gly Ala Pro  
 115 120 125

Leu Glu Ser Leu Arg Ser His Val Asp Leu Met Val Gly Ala Ala Thr  
 130 135 140

Ala Cys Ser Ala Leu Tyr Ile Gly Asp Leu Cys Gly Gly Val Phe Leu  
 145 150 155 160

Val Gly Gln Met Phe Ser Phe Gln Pro Arg Arg His Trp Thr Thr Gln  
165 170 175

Asp Cys Asn Cys Ser Ile Tyr Ala Gly His Val Thr Gly His Arg Met  
180 185 190

Ala

<210> 189  
<211> 579  
<212> DNA  
<213> hepatitis C virus

<400> 189  
acgtgctggct tcgccgacct catgggatac atcccgctcg tgggcgcccc cggtgggggc 60  
gtcgccaggg ccctggcgca tggcgtcagg gctgtggagg acgggattaa ctatgcgaca 120  
gggaatcttc ccggttgctc tttctctatc ttctcctcgg cacttctttc gtgcctcact 180  
gtcccagcgt cagctgagca ctaccggaat gcttcgggca tctatcacat caccaatgac 240  
tgtccgaatt ccagcgtagt ctatgaaact gaccaccata tattgcactt gccgggggtgc 300  
gtaccctgcg tgagggccgg gaacgtgtct cggttgctgga cgccggtaac acctacggtg 360  
gctgccgtat ccatggacgc tccgctcgag tccttcgggc ggcatgtgga cctaattgta 420  
ggtgcgggcca ccgtgtgttc tgtcctctat gttggagacc tctgtggagg tgctttccta 480  
gtggggcaga tgttcacctt ccagccgcgt cgccactgga ccacgcagga ttgtaattgc 540  
tccatctata ctggccatat caccggccac aggatggcg . 579

<210> 190  
<211> 193  
<212> PRT  
<213> hepatitis C virus

<400> 190

Thr Cys Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala  
1 5 10 15

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val  
20 25 30

Glu Asp Gly Ile Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe  
35 40 45

Ser Ile Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser  
50 55 60

Ala Glu His Tyr Arg Asn Ala Ser Gly Ile Tyr His Ile Thr Asn Asp  
65 70 75 80

Cys Pro Asn Ser Ser Val Val Tyr Glu Thr Asp His His Ile Leu His  
85 90 95

Leu Pro Gly Cys Val Pro Cys Val Arg Ala Gly Asn Val Ser Arg Cys  
100 105 110

Trp Thr Pro Val Thr Pro Thr Val Ala Ala Val Ser Met Asp Ala Pro  
115 120 125

Leu Glu Ser Phe Arg Arg His Val Asp Leu Met Val Gly Ala Ala Thr  
130 135 140

Val Cys Ser Val Leu Tyr Val Gly Asp Leu Cys Gly Gly Ala Phe Leu  
145 150 155 160

Val Gly Gln Met Phe Thr Phe Gln Pro Arg Arg His Trp Thr Thr Gln  
165 170 175

Asp Cys Asn Cys Ser Ile Tyr Thr Gly His Ile Thr Gly His Arg Met  
180 185 190

Ala

<210> 191  
<211> 289  
<212> DNA  
<213> hepatitis C virus

<400> 191  
atgagcacga atcctaaacc tcaaagaaaa accaaacgta acaccaaccg ccgccccatg 60  
gacgttaagt tcccggggcgg tggccagatc gttggtggag ttacttggt gccgcgcagg 120  
ggccccaggt tgggtgtgcg cgcgactagg aagacttcgg agcggtcgca acctcgtggg 180  
agacgtcagc ctatccccaa ggcacgtcga tctgagggaa ggtcctgggc tcagcccggg 240  
tacctatggc ctctttacgg taatgagggt tgtgggtggg caggatggg 289

<210> 192  
 <211> 96  
 <212> PRT  
 <213> hepatitis C virus

<400> 192

Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn  
 1 5 10 15

Arg Arg Pro Met Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly  
 20 25 30

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala  
 35 40 45

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro  
 50 55 60

Ile Pro Lys Ala Arg Arg Ser Glu Gly Arg Ser Trp Ala Gln Pro Gly  
 65 70 75 80

Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp  
 85 90 95

<210> 193  
 <211> 498  
 <212> DNA  
 <213> hepatitis C virus

<400> 193

atgagcacga atcctaaacc tcaaagaaaa accaaacgta acaccaaccg ccgccctatg	60
gacgtaaagt tcccggggcgg tggacagatc gttggcggag tttacttggt gccgcgcagg	120
ggcccccggt tgggtgtgcg cgcgactcgg aagacttcgg agcggtcgca acctcgtggc	180
aggcgtcaac ctatcccca ggcgcgccgg tccgagggca ggtcctgggc gcaagccggg	240
taccctggc ccctctatgg caatgagggc tgtgggtggg caggggtggct cctgtctcct	300
cgcggctctc ggccatcttg gggcccaa at gatccccggc ggagatcgcg caatctgggt	360
aaggatcatc ataccctgac gtgcggcttc gccgacctca tgggatacat cccgctcgtg	420
ggcgcccccg tggggggcgt cgccagggcc ctggcgcatg gcgtcagggc tgtggaggac	480
gggattaact atcgacag	498

<210> 194  
<211> 166  
<212> PRT  
<213> hepatitis C virus

<400> 194

Met Ser Thr Asn Pro Lys Pro Gln Arg Lys Thr Lys Arg Asn Thr Asn  
1 5 10 15

Arg Arg Pro Met Asp Val Lys Phe Pro Gly Gly Gly Gln Ile Val Gly  
20 25 30

Gly Val Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu Gly Val Arg Ala  
35 40 45

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro  
50 55 60

Ile Pro Lys Ala Arg Arg Ser Glu Gly Arg Ser Trp Ala Gln Ala Gly  
65 70 75 80

Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp  
85 90 95

Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp Gly Pro Asn Asp Pro  
100 105 110

Arg Arg Arg Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys  
115 120 125

Gly Phe Ala Asp Leu Met Gly Tyr Ile Pro Leu Val Gly Ala Pro Val  
130 135 140

Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Ala Val Glu Asp  
145 150 155 160

Gly Ile Asn Tyr Arg Gln  
165

<210> 195  
<211> 579  
<212> DNA  
<213> hepatitis C virus

<400> 195

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acgtgcggat tcgccgacct cgtgggggtac atcccgtctg taggcggccc cgttgggggc      60
gtcgcaaggg ctctcgaca tgggtgtgagg gttcttgagg acggggtgaa ttatgcaaca      120
gggaatctgc ctggttgctc tttctctatc ttcattcttg cacttctctc gtgcctcact      180
gtccccgcct ctgcagttcc ctaccgaaat gcctctggga tctatcatgt caccaatgat      240
tgcccaaact cttccatagt ctatgaggca gatgatctga tcctacacgc acctggctgc      300
gtgccttggtg tcaggaaaga taatgtgagt aggtgctggg tccaaattac cccacgctg      360
tcagccccga gcttcggagc agtcacggct ccccttcgga gagccgttga ttacttggtg      420
ggaggggctg ccctctgctc cgcgttatac gttggagacg cgtgtggggc actatTTTTTg      480
gtaggccaaa tgttcaccta taggcctcgc cagcatgcta cgggtgcagga ctgcaactgt      540
tccatctaca gtggccacgt caccggccat cagatggca                                579

```

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<210> 196
<211> 193
<212> PRT
<213> hepatitis C virus

<400> 196

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Thr Cys Gly Phe Ala Asp Leu Val Gly Tyr Ile Pro Leu Val Gly Gly
1           5           10           15

```

```

Pro Val Gly Gly Val Ala Arg Ala Leu Ala His Gly Val Arg Val Leu
          20           25           30

```

```

Glu Asp Gly Val Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe
          35           40           45

```

```

Ser Ile Phe Ile Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser
          50           55           60

```

```

Ala Val Pro Tyr Arg Asn Ala Ser Gly Ile Tyr His Val Thr Asn Asp
65           70           75           80

```

```

Cys Pro Asn Ser Ser Ile Val Tyr Glu Ala Asp Asp Leu Ile Leu His
          85           90           95

```

```

Ala Pro Gly Cys Val Pro Cys Val Arg Lys Asp Asn Val Ser Arg Cys
          100          105          110

```

```

Trp Val Gln Ile Thr Pro Thr Leu Ser Ala Pro Ser Phe Gly Ala Val

```



115	120	125
Thr Ala Pro Leu Arg Arg Ala Val Asp Tyr Leu Val Gly Gly Ala Ala		
130	135	140
Leu Cys Ser Ala Leu Tyr Val Gly Asp Ala Cys Gly Ala Leu Phe Leu		
145	150	155 160
Val Gly Gln Met Phe Thr Tyr Arg Pro Arg Gln His Ala Thr Val Gln		
165	170	175
Asp Cys Asn Cys Ser Ile Tyr Ser Gly His Val Thr Gly His Gln Met		
180	185	190

Ala

<210> 197  
 <211> 1485  
 <212> DNA  
 <213> hepatitis C virus

<220>  
 <221> misc\_feature  
 <222> (787)..(787)  
 <223> "n" is any nucleotide

<220>  
 <221> misc\_feature  
 <222> (1011)..(1011)  
 <223> "n" is any nucleotide

<220>  
 <221> misc\_feature  
 <222> (1444)..(1444)  
 <223> "n" is any nucleotide

<400> 197	
tgtgccagga ccatcaccac cggagcttct atcacatact ccacttacgg caagttcctt	60
gctgatggag ggtgttcagg cggcgcgcat gacgtgatca tatgcgacga gtgccattcc	120
caggacgcca ccaccattct tgggataggc actgtccttg accaggcaga gacggctgga	180
gctaggctcg tcgtcttggc cacggccacc cctcccgga gtgtgacaac gccccacccc	240
aacatcgagg aagtggcct gcctcaggag ggggaggttc cttctacgg cagagccatt	300

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ccccttgctt ttataaaggg tggtaggcat ctcatcttct gccattccaa gaaaaaatgt 360
gatgaactcg ccaagcaact gaccagcctg ggcgtgaacg ccgtggcata ttatagaggt 420
ctagacgtcg ccgtcatacc cacaacagga gacgtggtcg tgtgcagcac cgacgcgctc 480
atgacgggat tcaccggcga ctttgattct gtcatagact gcaactccgc cgtcactcag 540
acggtggact tcagtctgga tcccactttt accattgaga ctaccacagt gccccaggac 600
gcagtgtcca gaagccagcg ttggggccgc acggggagag gtaggcacgg catataccgg 660
tatgtctcgg ctggagagag accgtctggc atgttcgact ccgtggtgct ctgtgagtgc 720
tacgatgccg gatgtgcatg gtacgatctg actcctgccg agactaccgt gaggttgccg 780
gcttacntaa acacccccgg gctccctgtc tgtcaggacc atttggaatt ctgggagggg 840
gtgttcacgg ggctcactaa catcgacgtc cacatgctgt cacagaccaa acaggggtggg 900
gagaatttcc cataccttgt agcgtaccaa gcaacagtct gtgttcgcgc gaaagcggcc 960
ccccccagct gggacacaat gtggaaatgc atgctccgtc tcaaaccgac nttactggc 1020
cctactcccc tcttgtagag gctggggccc gtccagaatg agatcacact gacgcacccc 1080
atcaccaagt acattatggc ttgcatgtct gcggacttgg aggtcattac cagcacttgg 1140
gttctggtgg ggggcgttgt ggcgccctg gcggcctact gcttgacggt gggttcggtg 1200
gccatagtcg gtaggatcat cctctctggg aaacctgcca tcattcccga tagggaggtg 1260
ttataaccagc aatttgatga gatggaggag tgctcggcct cgttgcccta tatggacgaa 1320
acacgtgcca ttgccggaca attcaaagag aaagtgctcg gcttcatcag cacgaccggc 1380
cagaaggctg aaactctgaa gccggcagcc acgtctgtgt ggaacaaggc tgagcagttc 1440
tgnccacat acatgtggaa cttcatcagt gggatacaat aatag 1485

```

```

<210> 198
<211> 484
<212> PRT
<213> hepatitis C virus

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<220>
<221> MISC_FEATURE
<222> (263)..(263)
<223> "Xaa" is any amino acid

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<220>
<221> MISC_FEATURE
<222> (337)..(337)
<223> "Xaa" is any amino acid

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<220>

<221> MISC\_FEATURE

<222> (482)..(482)

<223> "Xaa" is any amino acid

<400> 198

Cys Ala Arg Thr Ile Thr Thr Gly Ala Ser Ile Thr Tyr Ser Thr Tyr  
1 5 10 15

Gly Lys Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala His Asp Val  
20 25 30

Ile Ile Cys Asp Glu Cys His Ser Gln Asp Ala Thr Thr Ile Leu Gly  
35 40 45

Ile Gly Thr Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val  
50 55 60

Val Leu Ala Thr Ala Thr Pro Pro Gly Ser Val Thr Thr Pro His Pro  
65 70 75 80

Asn Ile Glu Glu Val Ala Leu Pro Gln Glu Gly Glu Val Pro Phe Tyr  
85 90 95

Gly Arg Ala Ile Pro Leu Ala Phe Ile Lys Gly Gly Arg His Leu Ile  
100 105 110

Phe Cys His Ser Lys Lys Lys Cys Asp Glu Leu Ala Lys Gln Leu Thr  
115 120 125

Ser Leu Gly Val Asn Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ala  
130 135 140

Val Ile Pro Thr Thr Gly Asp Val Val Val Cys Ser Thr Asp Ala Leu  
145 150 155 160

Met Thr Gly Phe Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Ser  
165 170 175

Ala Val Thr Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile  
180 185 190

Glu Thr Thr Thr Val Pro Gln Asp Ala Val Ser Arg Ser Gln Arg Trp  
195 200 205

Gly Arg Thr Gly Arg Gly Arg His Gly Ile Tyr Arg Tyr Val Ser Ala  
210 215 220

Gly Glu Arg Pro Ser Gly Met Phe Asp Ser Val Val Leu Cys Glu Cys  
225 230 235 240

Tyr Asp Ala Gly Cys Ala Trp Tyr Asp Leu Thr Pro Ala Glu Thr Thr  
245 250 255

Val Arg Leu Arg Ala Tyr Xaa Asn Thr Pro Gly Leu Pro Val Cys Gln  
260 265 270

Asp His Leu Glu Phe Trp Glu Gly Val Phe Thr Gly Leu Thr Asn Ile  
275 280 285

Asp Ala His Met Leu Ser Gln Thr Lys Gln Gly Gly Glu Asn Phe Pro  
290 295 300

Tyr Leu Val Ala Tyr Gln Ala Thr Val Cys Val Arg Ala Lys Ala Pro  
305 310 315 320

Pro Pro Ser Trp Asp Thr Met Trp Lys Cys Met Leu Arg Leu Lys Pro  
325 330 335

Xaa Leu Thr Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Pro Val Gln  
340 345 350

Asn Glu Ile Thr Leu Thr His Pro Ile Thr Lys Tyr Ile Met Ala Cys  
355 360 365

Met Ser Ala Asp Leu Glu Val Ile Thr Ser Thr Trp Val Leu Val Gly  
370 375 380

Gly Val Val Ala Ala Leu Ala Ala Tyr Cys Leu Thr Val Gly Ser Val  
385 390 395 400

Ala Ile Val Gly Arg Ile Ile Leu Ser Gly Lys Pro Ala Ile Ile Pro  
405 410 415

Asp Arg Glu Val Leu Tyr Gln Gln Phe Asp Glu Met Glu Glu Cys Ser

420

425

430

Ala Ser Leu Pro Tyr Met Asp Glu Thr Arg Ala Ile Ala Gly Gln Phe  
 435 440 445

Lys Glu Lys Val Leu Gly Phe Ile Ser Thr Thr Gly Gln Lys Ala Glu  
 450 455 460

Thr Leu Lys Pro Ala Ala Thr Ser Val Trp Asn Lys Ala Glu Gln Phe  
 465 470 475 480

Trp Xaa Thr Tyr

<210> 199  
 <211> 1485  
 <212> DNA  
 <213> hepatitis C virus

<220>  
 <221> misc\_feature  
 <222> (684)..(684)  
 <223> "n" is any nucleotide

<220>  
 <221> misc\_feature  
 <222> (909)..(909)  
 <223> "n" is any nucleotide

<220>  
 <221> misc\_feature  
 <222> (1058)..(1058)  
 <223> "n" is any nucleotide

<220>  
 <221> misc\_feature  
 <222> (1133)..(1133)  
 <223> "n" is any nucleotide

<400> 199  
 tgtgccagga ccatcaccac cggagcttct atcacatact ccacttacgg caagttcctt 60  
 gctgatggag ggtgttcagg cggcgcgtat gacgtgatca tatgcgacga gtgccattcc 120  
 caggacgcca ccaccattct tgggataggc actgtccttg accaggcaga gacggctgga 180  
 gctaggctcg tcgtcttggc cacggccacc cctcccggca gtgtgacaac gccccacccc 240

aacatcgagg aagtggcct gcctcaggag ggggaggttc cttctacgg cagagccatt	300
ccccttgctt ttataaaggg tggtaggcat ctcatcttct gccattccaa gaaaaaatgt	360
gatgaactcg ccaagcaact gaccagcctg ggcgtgaacg ccgtggcata ttatagaggt	420
ctagacgtcg ccgtcatccc cacagcagga gacgtggtcg tgtgcagcac cgacgcgtc	480
atgacgggat tcaccggcga ctttgattct gtcatagact gcaactccgc cgtcactcag	540
acggtggact tcagtctgga tcccactttt accattgaga ctaccacagt gccccaggac	600
gcagtgtcca gaagccagcg taggggccgc acggggagag gtaggcacgg catataccgg	660
tatgtctcgg ctggagagag accntctgac atgttcgact ccgtggtgct ctgtgagtgc	720
tacgatgccg gatgtgcgtg gtatgatctg actcctgccg agactaccgt gaggttgccg	780
gcttacataa acacccccgg gtcacctgtc tgtcaggacc atttggaatt ctgggagggg	840
gtgttcacgg ggctcactaa catcgacgt ccatgtctgt cacagaccaa acagggtggg	900
gagaatttnc cataccttgt agcgtaccaa gcaacagtct gtgttcgcgc gaaagcggc	960
ccccccagct gggacacaat gtggaaatgc atgctccgtc tcaaaccgac tttaactggc	1020
cctactcccc tcttgtagag gctggggccc gtccagantg agatcacact gacgcacccc	1080
atcaccaagt acattatggc ttgcatgtct gcggacttgg aggtcattac cancacttgg	1140
gttctggtgg ggggcgttgt ggcggccctg gcggcctact gcttgacggt gggttcggt	1200
gccatagtcg gtaggatcat cctctctggg aaacctgcca tcattcccga tagggaggca	1260
ttataaccagc aatttgatga gatggaggag tgctcggcct cgttgcccta tatggacgag	1320
acacgtgcca ttgccggaca attcaaagag aaagtgctcg gcttcatcag cacgaccggc	1380
cagaaggctg aaactctgaa gccggcagcc acgtctgtgt ggaacaaggc tgagcagttc	1440
tgggccacat acatgtggaa cttcatcagc gggatacaat aatag	1485

<210> 200  
 <211> 484  
 <212> PRT  
 <213> hepatitis C virus

<220>  
 <221> MISC\_FEATURE  
 <222> (228)..(228)  
 <223> "Xaa" is any amino acid

<220>  
 <221> MISC\_FEATURE  
 <222> (303)..(303)

<223> "Xaa" is any amino acid

<220>

<221> MISC\_FEATURE

<222> (353)..(353)

<223> "Xaa" is any amino acid

<220>

<221> MISC\_FEATURE

<222> (378)..(378)

<223> "Xaa" is any amino acid

<400> 200

Cys	Ala	Arg	Thr	Ile	Thr	Thr	Gly	Ala	Ser	Ile	Thr	Tyr	Ser	Thr	Tyr
1				5					10					15	

Gly	Lys	Phe	Leu	Ala	Asp	Gly	Gly	Cys	Ser	Gly	Gly	Ala	Tyr	Asp	Val
			20					25					30		

Ile	Ile	Cys	Asp	Glu	Cys	His	Ser	Gln	Asp	Ala	Thr	Thr	Ile	Leu	Gly
		35					40					45			

Ile	Gly	Thr	Val	Leu	Asp	Gln	Ala	Glu	Thr	Ala	Gly	Ala	Arg	Leu	Val
	50					55					60				

Val	Leu	Ala	Thr	Ala	Thr	Pro	Pro	Gly	Ser	Val	Thr	Thr	Pro	His	Pro
65					70				75					80	

Asn	Ile	Glu	Glu	Val	Ala	Leu	Pro	Gln	Glu	Gly	Glu	Val	Pro	Phe	Tyr
				85				90						95	

Gly	Arg	Ala	Ile	Pro	Leu	Ala	Phe	Ile	Lys	Gly	Gly	Arg	His	Leu	Ile
		100						105					110		

Phe	Cys	His	Ser	Lys	Lys	Lys	Cys	Asp	Glu	Leu	Ala	Lys	Gln	Leu	Thr
		115					120					125			

Ser	Leu	Gly	Val	Asn	Ala	Val	Ala	Tyr	Tyr	Arg	Gly	Leu	Asp	Val	Ala
	130					135					140				

Val	Ile	Pro	Thr	Ala	Gly	Asp	Val	Val	Val	Cys	Ser	Thr	Asp	Ala	Leu
145					150					155					160

Met Thr Gly Phe Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Ser  
165 170 175

Ala Val Thr Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile  
180 185 190

Glu Thr Thr Thr Val Pro Gln Asp Ala Val Ser Arg Ser Gln Arg Arg  
195 200 205

Gly Arg Thr Gly Arg Gly Arg His Gly Ile Tyr Arg Tyr Val Ser Ala  
210 215 220

Gly Glu Arg Xaa Ser Asp Met Phe Asp Ser Val Val Leu Cys Glu Cys  
225 230 235 240

Tyr Asp Ala Gly Cys Ala Trp Tyr Asp Leu Thr Pro Ala Glu Thr Thr  
245 250 255

Val Arg Leu Arg Ala Tyr Ile Asn Thr Pro Gly Leu Pro Val Cys Gln  
260 265 270

Asp His Leu Glu Phe Trp Glu Gly Val Phe Thr Gly Leu Thr Asn Ile  
275 280 285

Asp Ala His Met Leu Ser Gln Thr Lys Gln Gly Gly Glu Asn Xaa Pro  
290 295 300

Tyr Leu Val Ala Tyr Gln Ala Thr Val Cys Val Arg Ala Lys Ala Pro  
305 310 315 320

Pro Pro Ser Trp Asp Thr Met Trp Lys Cys Met Leu Arg Leu Lys Pro  
325 330 335

Thr Leu Thr Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Pro Val Gln  
340 345 350

Xaa Glu Ile Thr Leu Thr His Pro Ile Thr Lys Tyr Ile Met Ala Cys  
355 360 365

Met Ser Ala Asp Leu Glu Val Ile Thr Xaa Thr Trp Val Leu Val Gly  
370 375 380

Gly Val Val Ala Ala Leu Ala Ala Tyr Cys Leu Thr Val Gly Ser Val



385 390 395 400

Ala Ile Val Gly Arg Ile Ile Leu Ser Gly Lys Pro Ala Ile Ile Pro  
405 410 415

Asp Arg Glu Ala Leu Tyr Gln Gln Phe Asp Glu Met Glu Glu Cys Ser  
420 425 430

Ala Ser Leu Pro Tyr Met Asp Glu Thr Arg Ala Ile Ala Gly Gln Phe  
435 440 445

Lys Glu Lys Val Leu Gly Phe Ile Ser Thr Thr Gly Gln Lys Ala Glu  
450 455 460

Thr Leu Lys Pro Ala Ala Thr Ser Val Trp Asn Lys Ala Glu Gln Phe  
465 470 475 480

Trp Ala Thr Tyr

<210> 201  
<211> 340  
<212> DNA  
<213> hepatitis C virus

<400> 201  
ctccactgtg actgagagag acatcagggg cgaagaagaa gtctatcagt gttgtgatct 60  
ggagcccagag gcccgcaagg taataaccgc cctcacggag agactctacg tgggcggccc 120  
tatgtacaat agcaagggag acctttgcgg gtatcgagg tgccgcgcaa gcggcggtata 180  
taccaccagc ttcgggaaca cactgacgtg ctaccttaaa gcctcagcag ccatcagggc 240  
tgcgggggctg aaggactgca ccatgctggt ttgcgggtgac gacttagtcg tgatcgctga 300  
aagcgggtggc gtcgaggagg acaagcgagc cctcggagct 340

<210> 202  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 202

Ser Thr Val Thr Glu Arg Asp Ile Arg Val Glu Glu Glu Val Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Val Ile Thr Ala Leu Thr  
 20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met Tyr Asn Ser Lys Gly Asp Leu  
 35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe  
 50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Ile Arg Ala  
 65 70 75 80

Ala Gly Leu Lys Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val  
 85 90 95

Val Ile Ala Glu Ser Gly Gly Val Glu Glu Asp Lys Arg Ala Leu Gly  
 100 105 110

Ala

<210> 203  
 <211> 340  
 <212> DNA  
 <213> hepatitis C virus

<400> 203  
 ctccacagtg actgaaagag acatcagggt cgaggaagag gtctaccagt gttgtgacct 60  
 ggagcctgaa acccgcaagg taatatctgc cctcactgaa agactctatg tgggcgggtcc 120  
 catgcacaac agcaggggag acctatgcgg gtaccgtaga tgccgcgcga gcggcgata 180  
 caccacaagc ttcgggaaca ctctgacgtg cttcctcaag gccacagcgg ccaccaaagc 240  
 cgctggccta aaggactgca ccatgttggt gtgtggtgac gacttagtcg ttatcgccga 300  
 aagcgatggt gtcgaagagg accgccgagc cctcggagct 340

<210> 204  
 <211> 113  
 <212> PRT  
 <213> hepatitis C virus

<400> 204

Ser Thr Val Thr Glu Arg Asp Ile Arg Val Glu Glu Glu Val Tyr Gln  
 1 5 10 15

Cys Cys Asp Leu Glu Pro Glu Thr Arg Lys Val Ile Ser Ala Leu Thr  
 20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met His Asn Ser Arg Gly Asp Leu  
 35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe  
 50 55 60

Gly Asn Thr Leu Thr Cys Phe Leu Lys Ala Thr Ala Ala Thr Lys Ala  
 65 70 75 80

Ala Gly Leu Lys Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val  
 85 90 95

Val Ile Ala Glu Ser Asp Gly Val Glu Glu Asp Arg Arg Ala Leu Gly  
 100 105 110

Ala

<210> 205  
 <211> 340  
 <212> DNA  
 <213> hepatitis C virus

<400> 205  
 ctccacggtg accgaaaggg atatcaggac cgaggaagag atctaccagt gctgcgacct 60  
 ggagcccgaa gcccgcaagg tgatatccgc cctaacggaa agactctacg tgggcggtcc 120  
 catgtacaac tccaaggggg acctatgcgg gcaacggagg tgccgcgcaa gcgggggtcta 180  
 caccaccagc ttcgggaaca ctgtaacgtg ttatctcaag gccgttgcgg ctactagggc 240  
 cgcaggtctg aaaggttgca gcatgctggt ttgtggagac gacttagtcg tcatctgcga 300  
 gagcggcggc gtagaggagg atgcaagagc cctccgagcc 340

<210> 206  
 <211> 113  
 <212> PRT  
 <213> hepatitis C virus

<400> 206

Ser Thr Val Thr Glu Arg Asp Ile Arg Thr Glu Glu Glu Ile Tyr Gln  
 1 5 10 15

Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Val Ile Ser Ala Leu Thr  
 20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met Tyr Asn Ser Lys Gly Asp Leu  
 35 40 45

Cys Gly Gln Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe  
 50 55 60

Gly Asn Thr Val Thr Cys Tyr Leu Lys Ala Val Ala Ala Thr Arg Ala  
 65 70 75 80

Ala Gly Leu Lys Gly Cys Ser Met Leu Val Cys Gly Asp Asp Leu Val  
 85 90 95

Val Ile Cys Glu Ser Gly Gly Val Glu Glu Asp Ala Arg Ala Leu Arg  
 100 105 110

Ala

<210> 207  
 <211> 340  
 <212> DNA  
 <213> hepatitis C virus

<400> 207  
 ctccacggtg actgaaaggg acattagggg cgaggaagag atctaccagt gctgtgacct 60  
 ggagcccagag gcacgcaagg tgatatccgc tctcacagaa agactctaca agggcggccc 120  
 catgtataac agcaaggggg acctatgcgg gcttcggagg tgccgcgcaa gcgggggtata 180  
 caccacaagc ttcgggaaca cggtgacatg ctaccttaaa gccacagcag ccaccagggc 240  
 tgcagggctg aaagattgca ctatgctggt atgcggtgac gacttagtcg ttattgccga 300  
 aagcgggtggc gtggaggagg acgcccagag cctccgagcc 340

<210> 208  
 <211> 113  
 <212> PRT  
 <213> hepatitis C virus

<400> 208

Ser Thr Val Thr Glu Arg Asp Ile Arg Val Glu Glu Glu Ile Tyr Gln

1                      5                      10                      15  
 Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Val Ile Ser Ala Leu Thr  
                     20                      25                      30  
 Glu Arg Leu Tyr Lys Gly Gly Pro Met Tyr Asn Ser Lys Gly Asp Leu  
                     35                      40                      45  
 Cys Gly Leu Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe  
                     50                      55                      60  
 Gly Asn Thr Val Thr Cys Tyr Leu Lys Ala Thr Ala Ala Thr Arg Ala  
 65                      70                      75                      80  
 Ala Gly Leu Lys Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val  
                     85                      90                      95  
 Val Ile Ala Glu Ser Gly Gly Val Glu Glu Asp Ala Arg Ala Leu Arg  
                     100                      105                      110

Ala

<210> 209  
 <211> 340  
 <212> DNA  
 <213> hepatitis C virus  
  
 <220>  
 <221> misc\_feature  
 <222> (13)..(13)  
 <223> "n" is any nucleotide  
  
 <220>  
 <221> misc\_feature  
 <222> (23)..(23)  
 <223> "n" is any nucleotide  
  
 <220>  
 <221> misc\_feature  
 <222> (65)..(65)  
 <223> "n" is any nucleotide  
  
 <220>  
 <221> misc\_feature  
 <222> (72)..(72)

<223> "n" is any nucleotide

<220>

<221> misc\_feature

<222> (277)..(277)

<223> "n" is any nucleotide

<220>

<221> misc\_feature

<222> (337)..(337)

<223> "n" is any nucleotide

<400> 209

ccccaccgtg acngagaggg acntcagggg cgaggaagag gtctatcagt gctgtaatct 60

ggagnccgat gnccgcaagg tcatcaacgc cctcacagag agactctacg tgggcggccc 120

tatgcacaac agcaagggag acctgtgtgg catccgtaga tgccgcgcga gcggcggttta 180

caccacgagc ttcggaaca cgctgacttg ctacctcaa gccacagcgg ccaccagggc 240

cgcggggcttg aaggattgca ccatgctggg ctgcggngac gacctggttg tcattgctga 300

gagcattggc atagacgagg acaagcaagc cctccgnact 340

<210> 210

<211> 113

<212> PRT

<213> hepatitis C virus

<220>

<221> MISC\_FEATURE

<222> (8)..(8)

<223> "Xaa" is any amino acid

<220>

<221> MISC\_FEATURE

<222> (22)..(22)

<223> "Xaa" is any amino acid

<220>

<221> MISC\_FEATURE

<222> (24)..(24)

<223> "Xaa" is any amino acid

<400> 210

Pro Thr Val Thr Glu Arg Asp Xaa Arg Val Glu Glu Glu Val Tyr Gln  
1 5 10 15

Cys Cys Asn Leu Glu Xaa Asp Xaa Arg Lys Val Ile Asn Ala Leu Thr  
20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met His Asn Ser Lys Gly Asp Leu  
35 40 45

Cys Gly Ile Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe  
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Thr Ala Ala Thr Arg Ala  
65 70 75 80

Ala Gly Leu Lys Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Ile Ala Glu Ser Ile Gly Ile Asp Glu Asp Lys Gln Ala Leu Arg  
100 105 110

Thr

<210> 211  
<211> 340  
<212> DNA  
<213> hepatitis C virus

<220>  
<221> misc\_feature  
<222> (11)..(11)  
<223> "n" is any nucleotide

<220>  
<221> misc\_feature  
<222> (327)..(327)  
<223> "n" is any nucleotide

<220>  
<221> misc\_feature  
<222> (333)..(334)  
<223> "n" is any nucleotide

<220>  
<221> misc\_feature  
<222> (340)..(340)  
<223> "n" is any nucleotide

<400> 211  
ctcgactgtg nccgagaggg acatcaggac agagggagag gtctatcagt gttgcgacct 60  
ggaaccggaa gcccgaagg taatcacgcg cctcactgag agactctatg tgggcggacc 120  
catgttcaac agcaagggag acctgtgcgg acaacgccgg tgccgcgcaa gcggcgtggt 180  
caccaccagc ttcgggaaca cactgacgtg ctaccttaaa gccacagctg ctactagagc 240  
agccggctta aaagattgca ccatgctggt ctgcggtgac gacttagtcg ttatttcgga 300  
gagcgccggt gtggaggagg atcccanaac ccnncgaccn 340

<210> 212  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<220>  
<221> MISC\_FEATURE  
<222> (4)..(4)  
<223> "Xaa" is any amino acid

<220>  
<221> MISC\_FEATURE  
<222> (109)..(109)  
<223> "Xaa" is any amino acid

<220>  
<221> MISC\_FEATURE  
<222> (111)..(111)  
<223> "Xaa" is any amino acid

<400> 212

Ser Thr Val Xaa Glu Arg Asp Ile Arg Thr Glu Gly Glu Val Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Val Ile Thr Ala Leu Thr  
20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met Phe Asn Ser Lys Gly Asp Leu  
35 40 45

Cys Gly Gln Arg Arg Cys Arg Ala Ser Gly Val Phe Thr Thr Ser Phe  
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Thr Ala Ala Thr Arg Ala



65

70

75

80

Ala Gly Leu Lys Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val  
                     85                                    90                                    95

Val Ile Ser Glu Ser Ala Gly Val Glu Glu Asp Pro Xaa Thr Xaa Arg  
                     100                                    105                                    110

Pro

&lt;210&gt; 213

&lt;211&gt; 340

&lt;212&gt; DNA

&lt;213&gt; hepatitis C virus

&lt;400&gt; 213

ctcaacagtc accgagaacg acatccgtgt tgaggagtca attaccaat gttgtgactt 60

ggcccccgag gccagacagg ccataaagtc gctcacagag cggctttata tcgggggtcc 120

cctgactaat tcaaaggggc agaactgtgg ctatcgccga tgccgcgcaa gcggcggtgct 180

gacgaccagc tgcggttaata cccttacatg ttacctaaag gcctctgcag cctgtcgagc 240

tgcaagctc caggactgca cgatgctcgt gtgcggggac gaccttgtcg ttatctgtga 300

aagcgcgga acccaagagg acgcggcgag cctacgagtc 340

&lt;210&gt; 214

&lt;211&gt; 113

&lt;212&gt; PRT

&lt;213&gt; hepatitis C virus

&lt;400&gt; 214

Ser Thr Val Thr Glu Asn Asp Ile Arg Val Glu Glu Ser Ile Tyr Gln  
   1                    5                                    10                                    15

Cys Cys Asp Leu Ala Pro Glu Ala Arg Gln Ala Ile Lys Ser Leu Thr  
                     20                                    25                                    30

Glu Arg Leu Tyr Ile Gly Gly Pro Leu Thr Asn Ser Lys Gly Gln Asn  
                     35                                    40                                    45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys  
                     50                                    55                                    60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Cys Arg Ala  
65 70 75 80

Ala Lys Leu Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Ile Cys Glu Ser Ala Gly Thr Gln Glu Asp Ala Ala Ser Leu Arg  
100 105 110

Val

<210> 215  
<211> 340  
<212> DNA  
<213> hepatitis C virus

<400> 215  
ctcaaccgtc acggagaggg atataagaac agaagaatcc atatatcaag cttgttcct 60  
gcccgaagag gccagaactg tcatacactc gctcaccgag agactctacg tgggagggcc 120  
catgataaac agcaaagggc aatcctgcgg ttacaggcgt tgccgcgcaa gcggtgtttt 180  
caccaccagc atggggaata ccatgacgtg ttacatcaaa gcccttgagc cgtgtaaagc 240  
cgcagggatc gtggaccccg tcatgctggt gtgtggagac gacctggtcg tcatctcgga 300  
gagccagggt aacgaggagg acgagcgaaa cctgagagct 340

<210> 216  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 216

Ser Thr Val Thr Glu Arg Asp Ile Arg Thr Glu Glu Ser Ile Tyr Gln  
1 5 10 15

Ala Cys Ser Leu Pro Gln Glu Ala Arg Thr Val Ile His Ser Leu Thr  
20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met Ile Asn Ser Lys Gly Gln Ser  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Phe Thr Thr Ser Met  
50 55 60

Gly Asn Thr Met Thr Cys Tyr Ile Lys Ala Leu Ala Ala Cys Lys Ala  
65 70 75 80

Ala Gly Ile Val Asp Pro Val Met Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Ile Ser Glu Ser Gln Gly Asn Glu Glu Asp Glu Arg Asn Leu Arg  
100 105 110

Ala

<210> 217  
<211> 340  
<212> DNA  
<213> hepatitis C virus

<400> 217  
ctcgactgtc actgaacagg acatcagggg ggaagaggag atatatcaat gctgcaacct 60  
tgaaccggag gccaggaaag tgatctcttc cctcacggag cggctttact gcggaggccc 120  
tatgtttaac agcaaggggg cccagtgtgg ttatcgccgt tgccgtgccg gtggagttct 180  
gcctaccagc tttggcaaca caatcacttg ttacatcaag gccacaacgg ccgcgaaggc 240  
cgcaggcctc cggaaccggg actttcttgt ctgcggagat gatctgggtcg tgggtggctga 300  
gagtgatggc gtcgacgagg atagagcagc cctgagagcc 340

<210> 218  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 218

Ser Thr Val Thr Glu Gln Asp Ile Arg Val Glu Glu Glu Ile Tyr Gln  
1 5 10 15

Cys Cys Asn Leu Glu Pro Glu Ala Arg Lys Val Ile Ser Ser Leu Thr  
20 25 30

Glu Arg Leu Tyr Cys Gly Gly Pro Met Phe Asn Ser Lys Gly Ala Gln  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr Ser Phe  
50 55 60

Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Thr Thr Ala Ala Lys Ala  
65 70 75 80

Ala Gly Leu Arg Asn Pro Asp Phe Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Val Ala Glu Ser Asp Gly Val Asp Glu Asp Arg Ala Ala Leu Arg  
100 105 110

Ala

<210> 219  
<211> 10  
<212> PRT  
<213> hepatitis C virus

<400> 219

Arg Ser Glu Gly Arg Thr Ser Trp Ala Gln  
1 5 10

<210> 220  
<211> 10  
<212> PRT  
<213> hepatitis C virus

<400> 220

Arg Ser Glu Gly Arg Thr Ser Trp Ala Gln  
1 5 10

<210> 221  
<211> 10  
<212> PRT  
<213> hepatitis C virus

<400> 221

Arg Thr Glu Gly Arg Thr Ser Trp Ala Gln  
1 5 10

<210> 222  
<211> 629  
<212> DNA  
<213> hepatitis C virus

<400> 222

tagacttttg ggagagcgtc ttcactggac taactcacat agatgccacac tttctgtcac 60  
 agactaagca gcagggactc aacttctcgt tcttgactgc ctaccaagcc actgtgtgcg 120  
 ctcgcgcgca ggctcctccc ccaagttggg acgagatgtg gaagtgtctc gtacggctta 180  
 agccaacact acatggacct acgcctcttc tatatcggtt ggggcctgtc caaaatgaaa 240  
 tctgcttgac acaccccatc aaaaaatata tcatggcatg catgtcagct gatctggaag 300  
 taaccaccag cacctgggtt ttgcttggag gggctctcgc ggcctagcg gcctactgct 360  
 tgtcagtcgg ttgtgttgtg attgtgggtc atatcgagct ggggggcaag cgggcaatcg 420  
 ttccagacaa agaggtgttg tatcaacaat acgatgagat ggaagagtgc tcacaagctg 480  
 ccccatatat cgaacaagct caggtaatag ctcaccagtt caaggaaaaa gtccttggat 540  
 tgctgcagcg agccacccaa caacaagctg tcattgagcc catagtaact accaactggc 600  
 aaaagcttga ggccttttgg cacaagcat 629

<210> 223  
 <211> 209  
 <212> PRT  
 <213> hepatitis C virus

<400> 223

Asp Phe Trp Glu Ser Val Phe Thr Gly Leu Thr His Ile Asp Ala His  
 1 5 10 15

Phe Leu Ser Gln Thr Lys Gln Gln Gly Leu Asn Phe Ser Phe Leu Thr  
 20 25 30

Ala Tyr Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser  
 35 40 45

Trp Asp Glu Met Trp Lys Cys Leu Val Arg Leu Lys Pro Thr Leu His  
 50 55 60

Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Pro Val Gln Asn Glu Ile  
 65 70 75 80

Cys Leu Thr His Pro Ile Thr Lys Tyr Ile Met Ala Cys Met Ser Ala  
 85 90 95

Asp Leu Glu Val Thr Thr Ser Thr Trp Val Leu Leu Gly Gly Val Leu  
 100 105 110

Ala Ala Leu Ala Ala Tyr Cys Leu Ser Val Gly Cys Val Val Ile Val  
115 120 125

Gly His Ile Glu Leu Gly Gly Lys Pro Ala Ile Val Pro Asp Lys Glu  
130 135 140

Val Leu Tyr Gln Gln Tyr Asp Glu Met Glu Glu Cys Ser Gln Ala Ala  
145 150 155 160

Pro Tyr Ile Glu Gln Ala Gln Val Ile Ala His Gln Phe Lys Glu Lys  
165 170 175

Val Leu Gly Leu Leu Gln Arg Ala Thr Gln Gln Gln Ala Val Ile Glu  
180 185 190

Pro Ile Val Thr Thr Asn Trp Gln Lys Leu Glu Ala Phe Trp His Lys  
195 200 205

His

<210> 224  
<211> 12  
<212> PRT  
<213> hepatitis C virus

<400> 224

Ile His Tyr Arg Asn Ala Ser Gly Ile Tyr His Ile  
1 5 10

<210> 225  
<211> 12  
<212> PRT  
<213> hepatitis C virus

<400> 225

Val Asn Tyr Arg Asn Ala Ser Gly Ile Tyr His Ile  
1 5 10

<210> 226  
<211> 12  
<212> PRT  
<213> hepatitis C virus

<400> 226

Val Asn Tyr Arg Asn Ala Ser Gly Val Tyr His Ile  
1 5 10

<210> 227  
<211> 12  
<212> PRT  
<213> hepatitis C virus

<400> 227

Val Asn Tyr His Asn Thr Ser Gly Ile Tyr His Leu  
1 5 10

<210> 228  
<211> 12  
<212> PRT  
<213> hepatitis C virus

<400> 228

Gln His Tyr Arg Asn Ala Ser Gly Ile Tyr His Val  
1 5 10

<210> 229  
<211> 12  
<212> PRT  
<213> hepatitis C virus

<400> 229

Gln His Tyr Arg Asn Val Ser Gly Ile Tyr His Val  
1 5 10

<210> 230  
<211> 12  
<212> PRT  
<213> hepatitis C virus

<400> 230

Ile His Tyr Arg Asn Ala Ser Asp Gly Tyr Tyr Ile  
1 5 10

<210> 231  
<211> 12  
<212> PRT  
<213> hepatitis C virus

<400> 231

Leu Gln Val Lys Asn Thr Ser Ser Ser Tyr Met Val

1 5 10

<210> 232  
<211> 11  
<212> PRT  
<213> hepatitis C virus

<400> 232

Val Trp Gln Leu Arg Ala Ile Val Leu His Val  
1 5 10

<210> 233  
<211> 11  
<212> PRT  
<213> hepatitis C virus

<400> 233

Val Tyr Glu Ala Asp Tyr His Ile Leu His Leu  
1 5 10

<210> 234  
<211> 11  
<212> PRT  
<213> hepatitis C virus

<400> 234

Val Tyr Glu Thr Asp Asn His Ile Leu His Leu  
1 5 10

<210> 235  
<211> 11  
<212> PRT  
<213> hepatitis C virus

<400> 235

Val Tyr Glu Thr Glu Asn His Ile Leu His Leu  
1 5 10

<210> 236  
<211> 11  
<212> PRT  
<213> hepatitis C virus

<400> 236

Val Phe Glu Thr Val His His Ile Leu His Leu  
1 5 10



<210> 237  
<211> 11  
<212> PRT  
<213> hepatitis C virus

<400> 237

Val Phe Glu Thr Glu His His Ile Leu His Leu  
1 5 10

<210> 238  
<211> 11  
<212> PRT  
<213> hepatitis C virus

<400> 238

Val Phe Glu Thr Asp His His Ile Met His Leu  
1 5 10

<210> 239  
<211> 11  
<212> PRT  
<213> hepatitis C virus

<400> 239

Val Tyr Glu Thr Glu Asn His Ile Leu His Leu  
1 5 10

<210> 240  
<211> 11  
<212> PRT  
<213> hepatitis C virus

<400> 240

Val Tyr Glu Ala Asp Ala Leu Ile Leu His Ala  
1 5 10

<210> 241  
<211> 13  
<212> PRT  
<213> hepatitis C virus

<400> 241

Val Gln Asp Gly Asn Thr Ser Ala Cys Trp Thr Pro Val  
1 5 10

<210> 242

<211> 13  
<212> PRT  
<213> hepatitis C virus

<400> 242

Val Lys Thr Gly Asn Gln Ser Arg Cys Trp Val Ala Leu  
1 5 10

<210> 243  
<211> 13  
<212> PRT  
<213> hepatitis C virus

<400> 243

Val Lys Thr Gly Asn Gln Ser Arg Cys Trp Val Ala Leu  
1 5 10

<210> 244  
<211> 13  
<212> PRT  
<213> hepatitis C virus

<400> 244

Val Arg Thr Gly Asn Gln Ser Arg Cys Trp Val Ala Leu  
1 5 10

<210> 245  
<211> 13  
<212> PRT  
<213> hepatitis C virus

<400> 245

Val Lys Thr Gly Asn Gln Ser Arg Cys Trp Ile Ala Leu  
1 5 10

<210> 246  
<211> 13  
<212> PRT  
<213> hepatitis C virus

<400> 246

Val Lys Thr Gly Asn Gln Ser Arg Cys Trp Ile Ala Leu  
1 5 10

<210> 247  
<211> 13  
<212> PRT

<213> hepatitis C virus

<400> 247

Val Lys Thr Gly Asn Ser Val Arg Cys Trp Ile Pro Leu  
1 5 10

<210> 248

<211> 13

<212> PRT

<213> hepatitis C virus

<400> 248

Val Lys Thr Gly Asn Val Ser Arg Cys Trp Ile Ser Leu  
1 5 10

<210> 249

<211> 13

<212> PRT

<213> hepatitis C virus

<400> 249

Val Arg Lys Asp Asn Val Ser Arg Cys Trp Val Gln Ile  
1 5 10

<210> 250

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 250

Ala Pro Ser Phe Gly Ala Val Thr Ala Pro  
1 5 10

<210> 251

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 251

Val Ser Gln Pro Gly Ala Leu Thr Lys Gly  
1 5 10

<210> 252

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 252

Val Lys Tyr Val Gly Ala Thr Thr Ala Ser  
1 5 10

<210> 253

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 253

Ala Pro Tyr Ile Gly Ala Pro Val Glu Ser  
1 5 10

<210> 254

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 254

Ala Gln His Leu Asn Ala Pro Leu Glu Ser  
1 5 10

<210> 255

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 255

Ser Pro Tyr Val Gly Ala Pro Leu Glu Pro  
1 5 10

<210> 256

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 256

Ser Pro Tyr Ala Gly Ala Pro Leu Glu Pro  
1 5 10

<210> 257

<211> 10

<212> PRT

<213> hepatitis C virus

<400> 257

Ala Pro Tyr Leu Gly Ala Pro Leu Glu Ser  
1 5 10

<210> 258  
<211> 10  
<212> PRT  
<213> hepatitis C virus

<400> 258

Ala Pro Tyr Leu Gly Ala Pro Leu Glu Ser  
1 5 10

<210> 259  
<211> 10  
<212> PRT  
<213> hepatitis C virus

<400> 259

Ala Pro Tyr Val Gly Ala Pro Leu Glu Ser  
1 5 10

<210> 260  
<211> 11  
<212> PRT  
<213> hepatitis C virus

<400> 260

Asn Val Pro Tyr Leu Gly Ala Pro Leu Thr Ser  
1 5 10

<210> 261  
<211> 10  
<212> PRT  
<213> hepatitis C virus

<400> 261

Ala Pro His Leu Arg Ala Pro Leu Ser Ser  
1 5 10

<210> 262  
<211> 10  
<212> PRT  
<213> hepatitis C virus

<400> 262

Ala Pro Tyr Leu Gly Ala Pro Leu Thr Ser  
1 5 10

<210> 263  
<211> 10  
<212> PRT  
<213> hepatitis C virus

<400> 263

Arg Pro Arg Gln His Ala Thr Val Gln Asp  
1 5 10

<210> 264  
<211> 10  
<212> PRT  
<213> hepatitis C virus

<400> 264

Ser Pro Gln His His Lys Phe Val Gln Asp  
1 5 10

<210> 265  
<211> 10  
<212> PRT  
<213> hepatitis C virus

<400> 265

Arg Pro Arg Arg Leu Trp Thr Thr Gln Glu  
1 5 10

<210> 266  
<211> 10  
<212> PRT  
<213> hepatitis C virus

<400> 266

Pro Pro Arg Ile His Glu Thr Thr Gln Asp  
1 5 10

<210> 267  
<211> 14  
<212> PRT  
<213> hepatitis C virus

<400> 267

Thr Ile Ser Tyr Ala Asn Gly Ser Gly Pro Ser Asp Asp Lys  
1 5 10

<210> 268  
 <211> 19  
 <212> PRT  
 <213> hepatitis C virus

<400> 268

Ser Arg Arg Gln Pro Ile Pro Arg Ala Arg Arg Thr Glu Gly Arg Ser  
 1 5 10 15

Trp Ala Gln

<210> 269  
 <211> 1443  
 <212> DNA  
 <213> hepatitis C virus

<400> 269

accatcacca ccggagcttc tatcacatac tccacttacg gcaagttcct tgctgatgga	60
gggtgttcag gcggcgcgta tgacgtgatc atatgcgacg agtgccattc ccaggacgcc	120
accaccattc ttgggatagg cactgtcctt gaccaggcag agacggctgg agctaggctc	180
gtcgtcttgg ccacggccac ccctcccggc agtgtgacaa cgccccaccc caacatcgag	240
gaagtggccc tgcctcagga gggggaggtt cccttctacg gcagagccat tccccttgct	300
tttataaagg gtggtaggca tctcatcttc tgccattcca agaaaaatg tgatgaactc	360
gccaagcaac tgaccagcct gggcgtgaac gccgtggcat attatagagg tctagacgtc	420
gccgtcatcc ccacagcagg agacgtggtc gtgtgcagca ccgacgcgct catgacggga	480
ttcaccggcg actttgatcc tgtcatagac tgcaactccg ccgtcactca gacggtggac	540
ttcagtctgg atcccacttt taccattgag actaccacag tgccccagga cgcagtgtcc	600
agaagccagc gtagggggccg cacgggggaga ggtaggcacg gcatataccg gtatgtctcg	660
gctggagaga gaccgtctga catgttcgac tccgtgggtgc tctgtgagtg ctacgatgcc	720
ggatgtgcgt ggtatgatct gactcctgcc gagactaccg tgaggttgcg cgcttacata	780
aacacccccg ggctccctgt ctgtcaggac catttggaat tctgggaggg ggtgttcacg	840
gggctcacta acatcgacgc tcacatgctg tcacagacca aacaggggtg ggagaatttc	900
ccataccttg tagcgtacca agcaacagtc tgtgttcgcg cgaaagcgcc cccccccagc	960
tgggacacaa tgtggaaatg catgctccgt ctcaaaccga ctttaactgg ccctactccc	1020
ctcttgtaga ggctggggcc cgtccagaat gagatcacac tgacgcaccc catcaccaag	1080

tacattatgg cttgcatgtc tgcggacttg gaggtcatta ccagcacttg ggttctggtg 1140  
 gggggcgttg tggcggccct ggcggcctac tgcttgacgg tgggttcggt agccatagtc 1200  
 ggtaggatca tcctctctgg gaaacctgcc atcattcccg atagggaggc attataccag 1260  
 caatttgatg agatggagga gtgctcggcc tcgttgccct atatggacga gacacgtgcc 1320  
 attgccggac aattcaaaga gaaagtgtc ggcttcatca gcacgaccgg ccagaaggct 1380  
 gaaactctga agccggcagc cacgtctgtg tggaacaagg ctgagcagtt ctgggccaca 1440  
 tac 1443

<210> 270  
 <211> 481  
 <212> PRT  
 <213> hepatitis C virus

<400> 270

Thr Ile Thr Thr Gly Ala Ser Ile Thr Tyr Ser Thr Tyr Gly Lys Phe  
 1 5 10 15

Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Val Ile Ile Cys  
 20 25 30

Asp Glu Cys His Ser Gln Asp Ala Thr Thr Ile Leu Gly Ile Gly Thr  
 35 40 45

Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala  
 50 55 60

Thr Ala Thr Pro Pro Gly Ser Val Thr Thr Pro His Pro Asn Ile Glu  
 65 70 75 80

Glu Val Ala Leu Pro Gln Glu Gly Glu Val Pro Phe Tyr Gly Arg Ala  
 85 90 95

Ile Pro Leu Ala Phe Ile Lys Gly Gly Arg His Leu Ile Phe Cys His  
 100 105 110

Ser Lys Lys Lys Cys Asp Glu Leu Ala Lys Gln Leu Thr Ser Leu Gly  
 115 120 125

Val Asn Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ala Val Ile Pro  
 130 135 140



Thr Ala Gly Asp Val Val Val Cys Ser Thr Asp Ala Leu Met Thr Gly  
145 150 155 160

Phe Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Ser Ala Val Thr  
165 170 175

Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Thr  
180 185 190

Thr Val Pro Gln Asp Ala Val Ser Arg Ser Gln Arg Arg Gly Arg Thr  
195 200 205

Gly Arg Gly Arg His Gly Ile Tyr Arg Tyr Val Ser Ala Gly Glu Arg  
210 215 220

Pro Ser Asp Met Phe Asp Ser Val Val Leu Cys Glu Cys Tyr Asp Ala  
225 230 235 240

Gly Cys Ala Trp Tyr Asp Leu Thr Pro Ala Glu Thr Thr Val Arg Leu  
245 250 255

Arg Ala Tyr Ile Asn Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu  
260 265 270

Glu Phe Trp Glu Gly Val Phe Thr Gly Leu Thr Asn Ile Asp Ala His  
275 280 285

Met Leu Ser Gln Thr Lys Gln Gly Gly Glu Asn Phe Pro Tyr Leu Val  
290 295 300

Ala Tyr Gln Ala Thr Val Cys Val Arg Ala Lys Ala Pro Pro Pro Ser  
305 310 315 320

Trp Asp Thr Met Trp Lys Cys Met Leu Arg Leu Lys Pro Thr Leu Thr  
325 330 335

Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Pro Val Gln Asn Glu Ile  
340 345 350

Thr Leu Thr His Pro Ile Thr Lys Tyr Ile Met Ala Cys Met Ser Ala  
355 360 365

Asp Leu Glu Val Ile Thr Ser Thr Trp Val Leu Val Gly Gly Val Val  
370 375 380

Ala Ala Leu Ala Ala Tyr Cys Leu Thr Val Gly Ser Val Ala Ile Val  
385 390 395 400

Gly Arg Ile Ile Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu  
405 410 415

Ala Leu Tyr Gln Gln Phe Asp Glu Met Glu Glu Cys Ser Ala Ser Leu  
420 425 430

Pro Tyr Met Asp Glu Thr Arg Ala Ile Ala Gly Gln Phe Lys Glu Lys  
435 440 445

Val Leu Gly Phe Ile Ser Thr Thr Gly Gln Lys Ala Glu Thr Leu Lys  
450 455 460

Pro Ala Ala Thr Ser Val Trp Asn Lys Ala Glu Gln Phe Trp Ala Thr  
465 470 475 480

Tyr

<210> 271  
<211> 5  
<212> PRT  
<213> hepatitis C virus

<400> 271

Leu Glu Trp Arg Asn  
1 5

<210> 272  
<211> 20  
<212> PRT  
<213> hepatitis C virus

<400> 272

Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg  
1 5 10 15

Glu Phe Asp Glu  
20

<210> 273  
<211> 20  
<212> PRT  
<213> hepatitis C virus

<400> 273

Ser Gln His Leu Pro Tyr Ile Glu Gln Gly Met Met Leu Ala Glu Gln  
1 5 10 15

Phe Lys Gln Lys  
20

<210> 274  
<211> 20  
<212> PRT  
<213> hepatitis C virus

<400> 274

Leu Ala Glu Gln Phe Lys Gln Lys Ala Leu Gly Leu Leu Gln Thr Ala  
1 5 10 15

Ser Arg Gln Ala  
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<210> 275  
<211> 20  
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<400> 275

Leu Ser Gly Arg Pro Ala Val Ile Pro Asp Arg Glu Val Leu Tyr Gln  
1 5 10 15

Glu Phe Asp Glu  
20

<210> 276  
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<400> 276

Ala Ser His Leu Pro Tyr Ile Glu Gln Gly Met Gln Leu Ala Glu Gln  
1 5 10 15

Phe Lys Gln Lys  
20

<210> 277  
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<400> 277

Leu Ala Glu Gln Phe Lys Gln Lys Ala Leu Gly Leu Leu Gln Thr Ala  
1 5 10 15

Thr Lys Gln Ala  
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<400> 278

Val Asn Gln Arg Ala Val Val Ala Pro Asp Lys Glu Val Leu Tyr Glu  
1 5 10 15

Ala Phe Asp Glu  
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<210> 279  
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<400> 279

Ala Ser Arg Ala Ala Leu Ile Glu Gly Gln Arg Ile Ala Glu Met  
1 5 10 15

Leu Lys Ser Lys  
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<210> 280  
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<212> PRT  
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<400> 280

Ile Ala Glu Met Leu Lys Ser Lys Ile Gln Gly Leu Leu Gln Gln Ala

1 5 10 15

Ser Lys Gln Ala  
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<210> 281  
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<400> 281

Leu Asn Asp Arg Val Val Val Ala Pro Asp Lys Glu Ile Leu Tyr Glu  
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Ala Phe Asp Glu  
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<210> 282  
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<400> 282

Ala Ser Lys Ala Ala Leu Ile Glu Glu Gly Gln Arg Met Ala Glu Met  
1 5 10 15

Leu Lys Ser Lys  
20

<210> 283  
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<212> PRT  
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<400> 283

Met Ala Glu Met Leu Lys Ser Lys Ile Gln Gly Leu Leu Gln Gln Ala  
1 5 10 15

Thr Arg Gln Ala  
20

<210> 284  
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<212> PRT  
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<400> 284

Ala Ala Ser Leu Pro Tyr Met Asp Glu Thr Arg Ala Ile Ala Gly Gln  
1 5 10 15

Phe Lys Glu Lys  
20